



## Investment Advisory Committee (IAC) Meeting

Wednesday, 11/5/2025  
9:00 AM - 12:30 PM ET

### 1. Approval of Minutes (August 20, 2025)

*IAC Meeting Minutes 08202025 FINAL - Page 2*

### 2. CIO Report

*CIO Report - November 2025 - Page 5*

*Performance Summary 08-31-2025 - Page 12*

*Asset Allocation Report - August 2025 - Page 13*

*Daily Asset Allocation Report 10-29-2025 - Page 14*

*New Investments and Terminations 11-05-2025 - Page 15*

### 3. Private Market Program Reviews

*Private Markets Overview IAC Nov 5 2025 , 103125 - Page 16*

*Real Assets November 2025 IAC Presentation, 103129 - Page 25*

*Private Equity - IAC Nov 5 2025 Reading Deck, 103125 - Page 44*

*Credit Strategies November IAC Meeting Slides, 103125 - Page 67*

*PIP November 2025 IAC Meeting Slides, 103125 - Page 86*

### 4. Private Market Roundtable on Current Topics

*Private Markets - Roundtable, 103125 - Page 95*

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## Minutes

A meeting of the Investment Advisory Committee of the Virginia Retirement System was held on August 20, 2025 with the following members present:

Larry Kochard  
Eric Baggesen, joined remotely under § 2.2-3708.3(B)(3)  
Theodore Economou, joined remotely under § 2.2-3708.3(B)(3)  
Palmer Garson, joined remotely under § 2.2-3708.3(B)(4)  
Nancy Leake  
Bryan Lewis, joined remotely under § 2.2-3708.3(B)(2)  
Rod Smyth  
Hance West

The following Board members were present:

A. Scott Andrews (remote)  
John Bennett (remote)  
Lawrence Bernert  
Clifford Foster  
Matthew James

The following staff members were in attendance:

Trish Bishop, Andrew Junkin, Chung Ma, Stephen Adelaar, John Alouf, Advait Apte, Rory Badura, Parham Behrooz, Brock Bell, Matthew Bennett, Erica Billingslea, Ty Bowers, Lee Buchanan, Ryan Carlson, Warren Chang, Tom Coleman, Perry Corsello, Sara Denson, Kenji Epling, Laurie Fennell, Laura Fields, Antonio Fisher, Katherine Grawe, JT Grier, Mehtab Haleem, Dane Honrado, K.C. Howell, Robert Irving, Sandy Jack, Wendy Jenkins, Ross Kasarda, Kristina Koutrakos, Matt Lacy, Jennifer MacKnight, Curt Mattson, Scott Mootz, Teresa Nguyen, Walker Noland, Greg Oliff, Bob Pryor, Garret Rhodes, Jummai Sarki-Hurd, Daniel Schlussler, Jenny Schoeller, Michael Scott, Richard Slate, Virginia Sowers, Larry Tentor, Nathan Thomas, Korey Turner, Leslie Weldon, Daniel Whitlock, and Steve Woodall.

Also in attendance was Lauren Albanese with Financial Investment News; Muskan Arora with Markets Group; Doston Bradley of Cerberus Capital; Thomas Cosmer of PineBridge; Mitchell King and AK Ray of BlackRock; Cyril Espanol with Pageant Media; Jacob Hodges and Jake Sellers with Encore; Alexandra Jansson with JLARC; Tom Metzler of Principal; Jeffrey Podesta of Schafer-Cullen; Rasha Anaya, Emmin Bickford, Cam Blank, May

Brickhouse, , Kate Gordon, Camille Rodney, and Nancy Wein with unknown affiliation.

Mr. Kochard called the meeting to order at 9:00 a.m.

Mr. Kochard welcomed Eric Baggesen to the IAC.

Mr. Kochard announced that Mr. Baggesen and Mr. Economou would be participating remotely in accordance with § 2.2-3708.3 (B)(3) of the Code of Virginia; Ms. Garson would be participating remotely in accordance with § 2.2-3708.3 (B)(4) of the Code of Virginia; and Mr. Lewis would be participating remotely in accordance with § 2.2-3708.3 (B)(2) of the Code of Virginia

Mr. Kochard took a roll call of each Committee member for attendance purposes:

Mr. Baggesen - present  
Mr. Economou – present  
Ms. Garson – not present  
Ms. Leake – present  
Mr. Lewis – present  
Mr. Smyth – present  
Mr. West – present  
Mr. Kochard – present

**Minutes**

A motion was made by Mr. Smyth and seconded by Ms. Leake to approve the minutes from the April 2, 2025 Committee meeting. The motion was unanimously approved.

Ms. Garson joined the meeting remotely at 9:07 a.m.

**CIO Report**

Mr. Junkin began his report with a market overview. Mr. Junkin then discussed the total fund performance and asset allocation. Last, Mr. Junkin reviewed the New Investments and Terminations Report.

**Portfolio Solutions  
Group Review**

Mr. Ma explained the scenario analysis discussion will be moved up in the agenda so there will be ample time for the IAC to opine on this topic. Mr. Ma provided a review of the Portfolio Solutions Group. Review topics included an overview of the program, the team, and markets.

Mr. Mootz provided a review of Risk Management at VRS. Review topics included an overview of the team, importance of risk management, the VRS approach to risk management, and forward-looking risk estimates.

Mr. Bell provided a review of Portfolio Integration and Treasury. Review topics included an overview of the team, leverage deployment, current funding channels, future funding sources, guidance on rebalancing, funding optimization, Treasury enhancements, and Treasury initiatives in progress.

**Asset Allocation Scenario Analysis** Mr. Ma provided a review of forward returns and scenario analysis. Review topics included state plans and external managers' forward returns, long term VRS forward returns, and scenario analysis. Mr. Ma introduced Mr. Badura to assist in discussing various scenario analysis including median paths, baselines, secular stagnation, tech bubble, and productivity boost.

**Portfolio Solutions Group Review (continued)** Ms. Koutrakos and Mr. Kasarda provided a review of the Diversifying Strategies program. Review topics included an overview of the team, portfolio objectives, program expectations and structure, performance, program evolution timeline, trend drawdown, returns and risk, and looking ahead.

Ms. Grawe provided a review of the Exposure Management Portfolio. Review topics included an overview of the objectives, process review, performance, and looking ahead.

The Committee members engaged in general discussion throughout the reviews provided.

**Adjournment** Mr. West made a motion to adjourn the meeting. Mr. Smyth seconded the motion. Mr. Kochard asked for the Committee members to vote on the motion, and the motion was unanimously approved.

The meeting was adjourned at 11:46 a.m.

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Larry Kochard, Chairperson

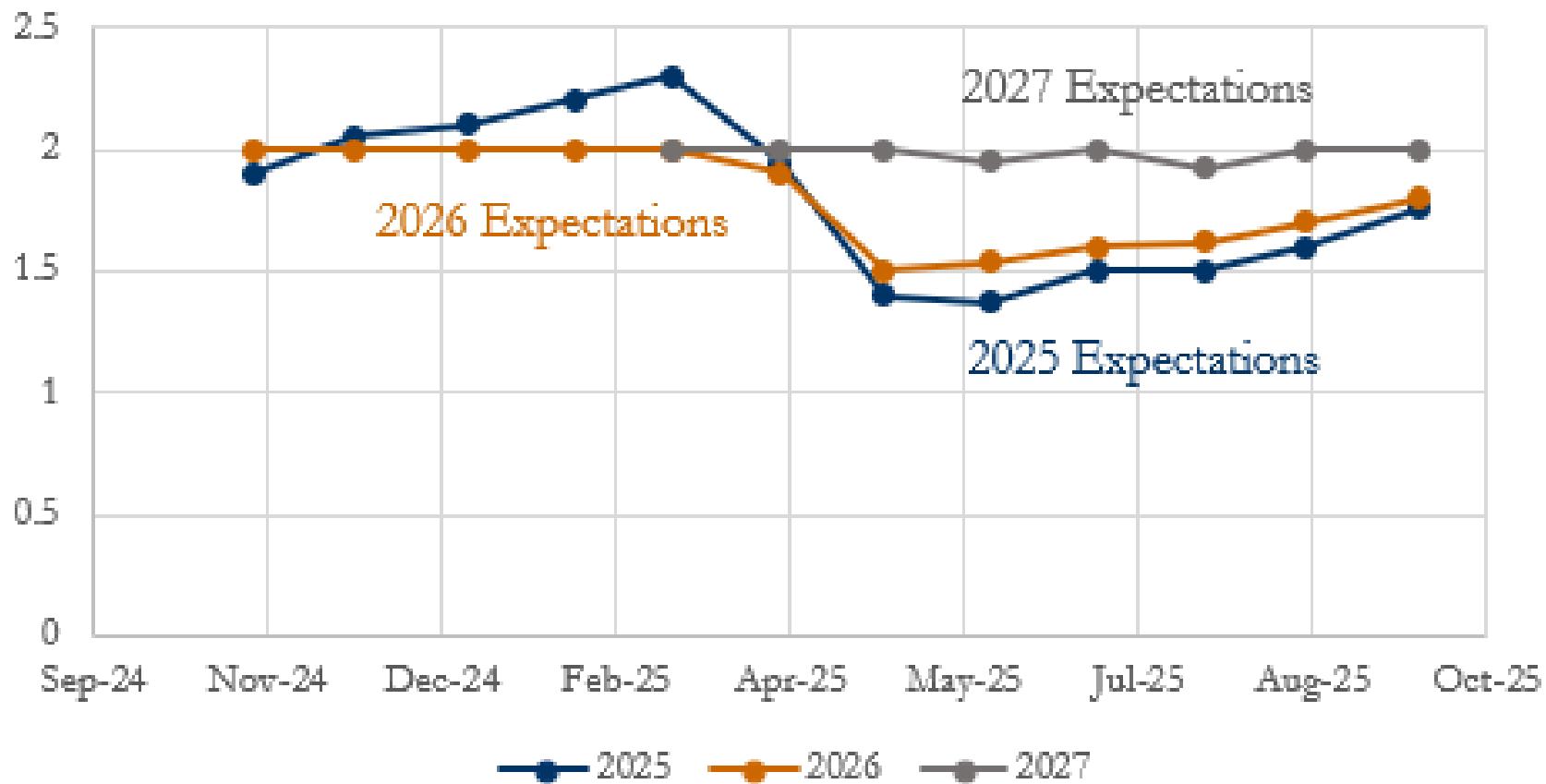


# Chief Investment Officer Report

Market Review – November 2025  
Andrew Junkin

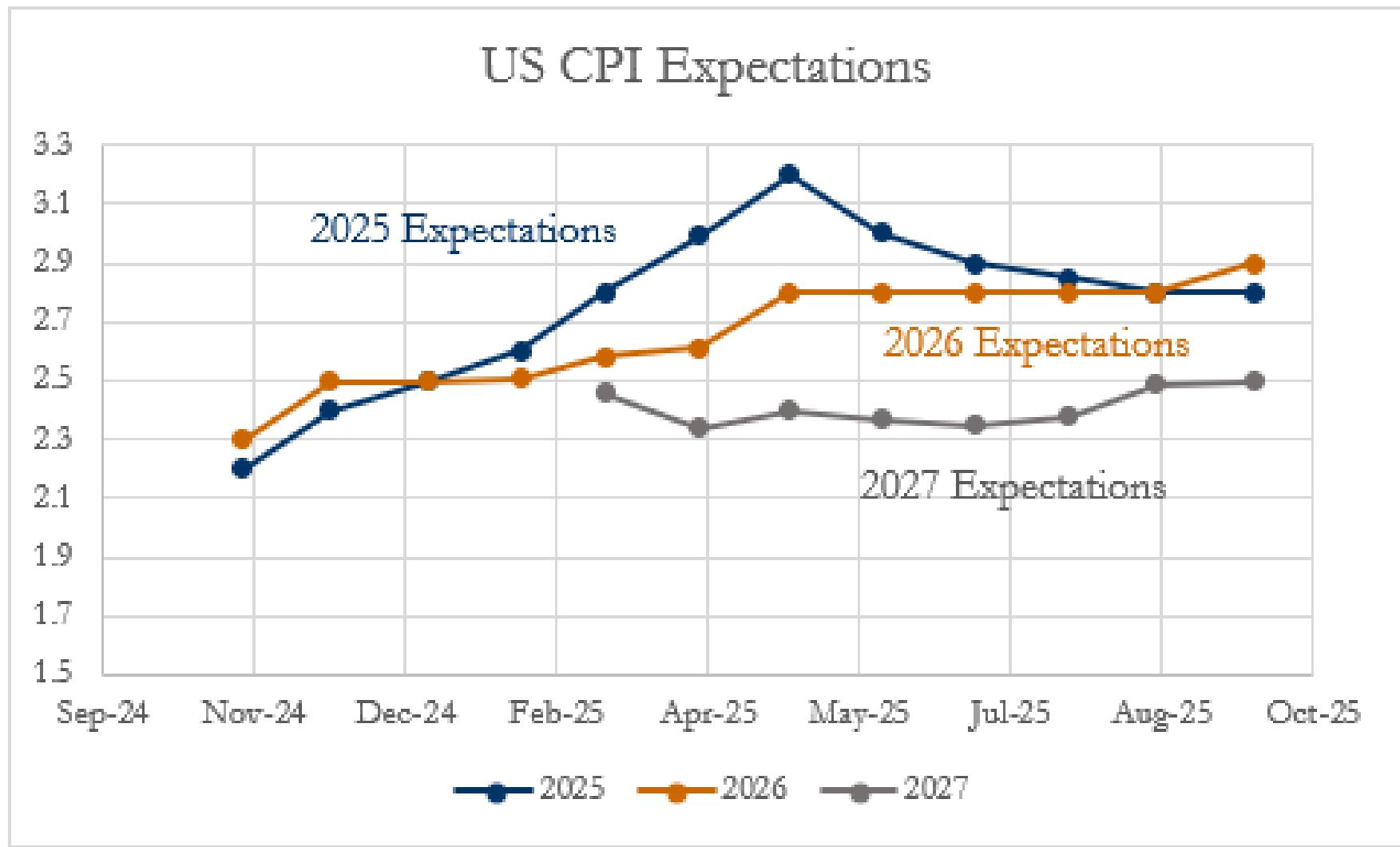
# Real GDP Growth Expectations

RGDP Growth Expectations (monthly)



Source: Bloomberg

# US CPI Expectations

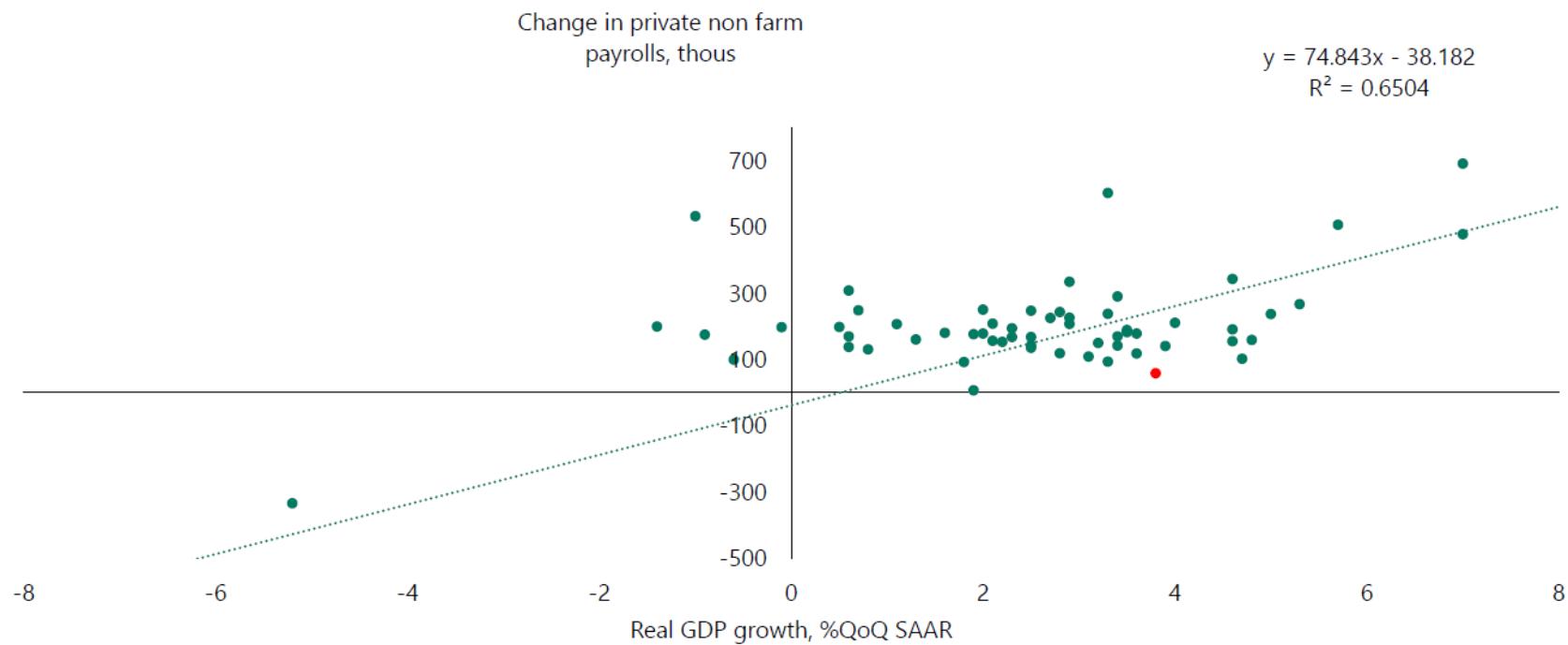


Source: Bloomberg

# Why is job growth slowing?

APOLLO

Slow job growth is inconsistent with strong GDP



Sources: BEA, BLS, Haver Analytics, Apollo Chief Economist

# Immigration changes

APOLLO

Slower immigration is a key reason why the labor market is weak

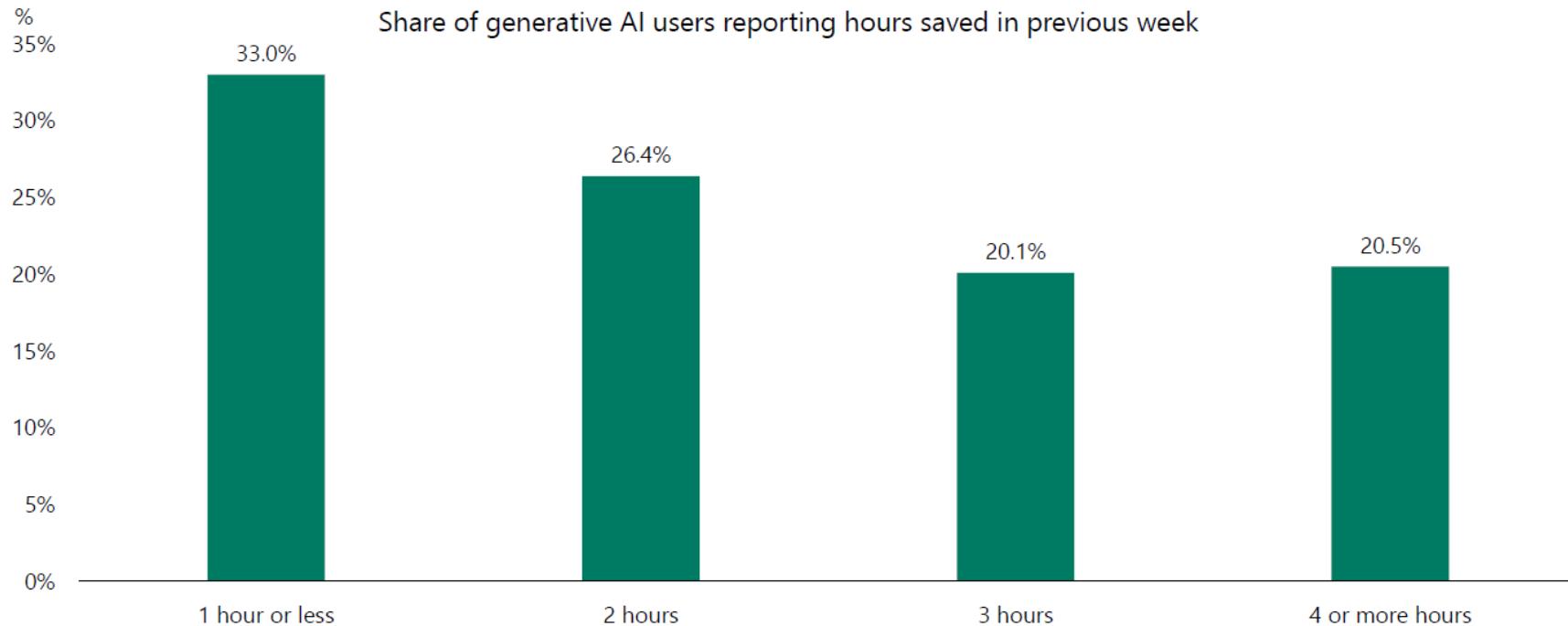


Sources: BEA, BLS, Haver Analytics, Apollo Chief Economist

# AI is increasing productivity

APOLLO

Generative AI users are reporting that they are saving a lot of hours

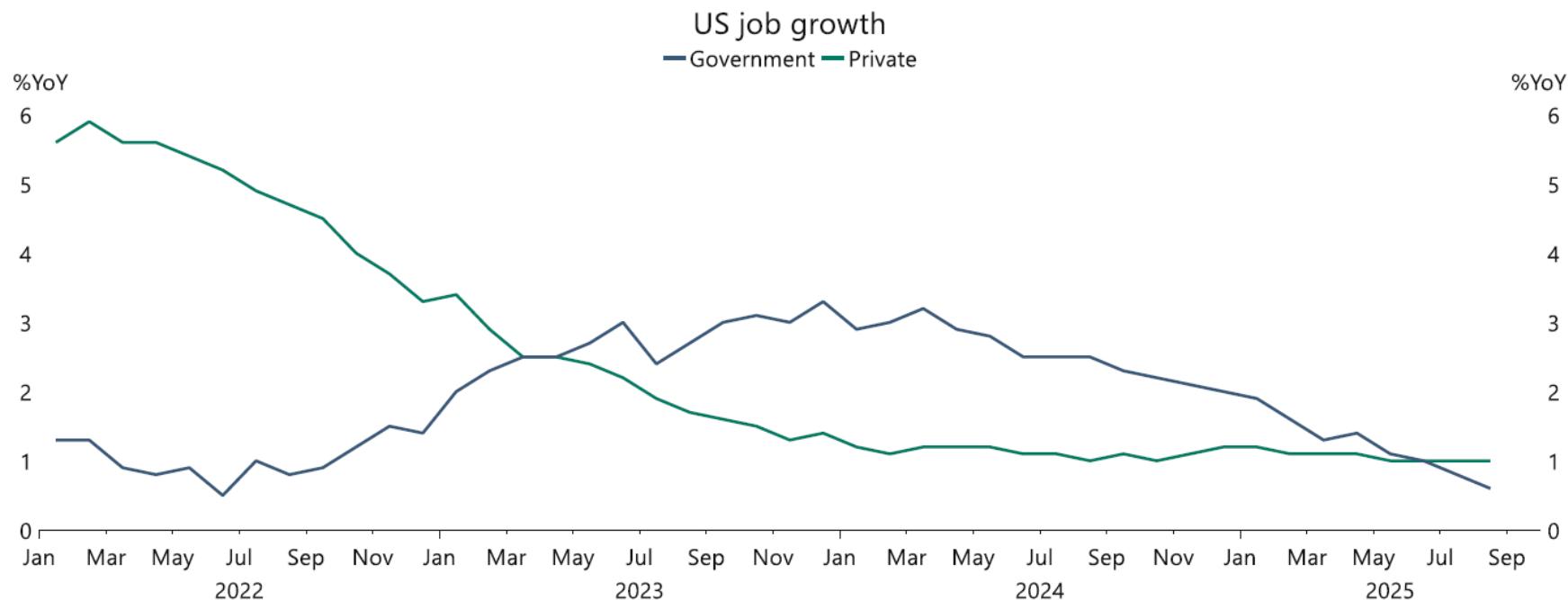


Note: Survey from November 2024. Sources: [The Impact of Generative AI on Work Productivity | St. Louis Fed](#), Apollo Chief Economist

# Government job growth slowing

APOLLO

Government job growth was exceptionally high in 2022, 2023 and 2024. And now normalizing in 2025.



Sources: US Bureau of Labor Statistics (BLS), Macrobond, Apollo Chief Economist

**PERFORMANCE SUMMARY**
**Rolling Periods Ending**
**August 31, 2025**

**TOTAL FUND PERFORMANCE**
*(Net of Fees)*

	10 Yr	5 Yr	3 Yr	1 Yr	Qtr	Month	Fiscal YTD	Cal YTD	Market Value (\$MM)
<b>Total Public Equity</b>	<b>10.6</b>	<b>13.2</b>	<b>18.2</b>	<b>16.8</b>	<b>7.9</b>	<b>2.9</b>	<b>3.7</b>	<b>15.6</b>	<b>41,675</b>
<i>Benchmark</i>	10.7	12.0	17.1	14.5	7.5	2.7	3.4	14.0	
<b>Total Private Equity</b>	<b>14.1</b>	<b>16.8</b>	<b>3.7</b>	<b>5.6</b>	<b>1.5</b>	<b>0.2</b>	<b>0.0</b>	<b>3.3</b>	<b>19,667</b>
<i>Benchmark</i>	11.5	14.0	12.7	13.8	2.2	6.0	6.8	4.8	
<b>Total Real Assets</b>	<b>7.5</b>	<b>6.6</b>	<b>0.7</b>	<b>3.6</b>	<b>1.4</b>	<b>0.1</b>	<b>0.1</b>	<b>2.3</b>	<b>15,861</b>
<i>Benchmark</i>	5.3	4.1	-1.9	3.5	1.1	0.4	0.7	3.1	
<b>Total Credit Strategies</b>	<b>7.2</b>	<b>8.5</b>	<b>8.7</b>	<b>9.2</b>	<b>2.2</b>	<b>0.3</b>	<b>0.8</b>	<b>4.6</b>	<b>18,632</b>
<i>Benchmark</i>	5.9	5.9	8.8	7.3	2.7	0.8	1.4	5.2	
<b>Total Diversifying Strategies</b>	<b>n/a</b>	<b>6.1</b>	<b>6.6</b>	<b>5.4</b>	<b>0.9</b>	<b>1.4</b>	<b>0.9</b>	<b>3.5</b>	<b>5,313</b>
<i>Benchmark</i>	n/a	5.4	7.7	7.0	1.7	0.6	1.1	4.5	
<b>Total Private Investment Partnerships</b>	<b>9.0</b>	<b>12.9</b>	<b>6.3</b>	<b>7.6</b>	<b>2.8</b>	<b>0.0</b>	<b>0.0</b>	<b>2.4</b>	<b>2,088</b>
<i>Benchmark</i>	8.1	8.4	6.4	8.1	2.1	2.4	2.9	4.4	
<b>Total Fixed Income</b>	<b>2.8</b>	<b>0.4</b>	<b>4.1</b>	<b>4.1</b>	<b>2.9</b>	<b>1.3</b>	<b>1.2</b>	<b>5.6</b>	<b>18,832</b>
<i>Benchmark</i>	1.9	-0.3	3.6	3.6	2.7	1.2	1.1	5.2	
<b>Total Fund</b>	<b>8.5</b>	<b>9.8</b>	<b>8.9</b>	<b>9.2</b>	<b>4.0</b>	<b>1.3</b>	<b>1.6</b>	<b>7.6</b>	<b>123,710</b>
<i>VRS Custom Benchmark</i>	7.8	8.1	9.9	9.6	3.9	2.2	2.7	7.6	

Effective July 2013, the VRS Custom Benchmark is a blend of the Asset Class Benchmarks at policy weights.

Effective January 2024, the Total Fund includes leverage.

The VRS Cash Account, the Treasurer Short-Term Investment Account, the VRS Rebalancing Account, transition activity and accounts with market values of less than \$1 million are included in the Total Fund's market value. Differences in market value totals are due to rounding.

The Performance Report may differ from the VRS Annual Comprehensive Financial Report (ACFR) due to each report's requirements and objectives.

**Leverage Cost Measurement Information**
*(Information provided for purposes of monitoring the cost effectiveness of leverage implementation.)*

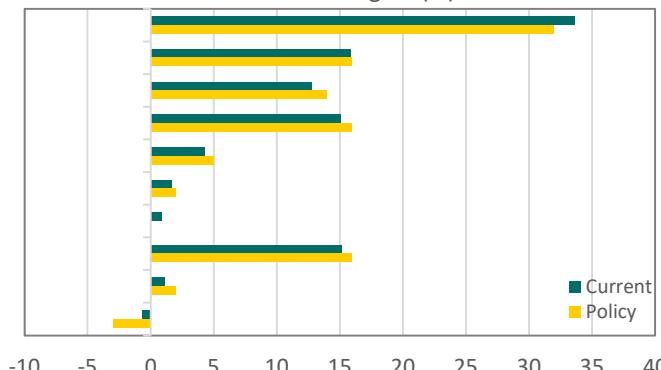
	10 Yr	5 Yr	3 Yr	1 Yr	Qtr	Month	Fiscal YTD	Cal YTD	Market Value (\$MM)
<b>Leverage</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>5.2</b>	<b>1.2</b>	<b>0.4</b>	<b>0.8</b>	<b>3.4</b>	<b>(854)</b>
<i>Benchmark</i>	n/a	n/a	n/a	5.1	1.2	0.4	0.8	3.3	

Effective January 2024, the Leverage Custom Benchmark is the Secured Overnight Financing Rate (SOFR) plus 50 basis points per annum.

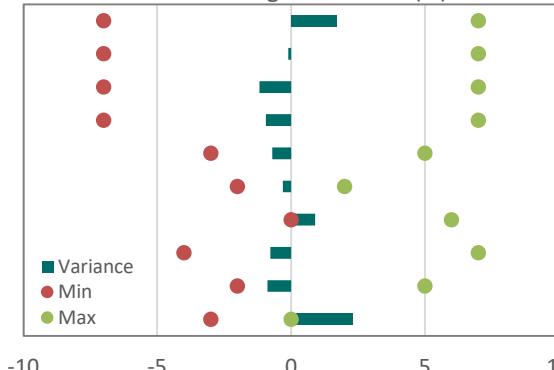
# Asset Allocation Report

August 31, 2025

Absolute Weights (%)



Active Weights & Limits (%)



Tracking Error (%)

5Yr Fund	2.4
5Yr Public	1.6

Asset Class	Billions (\$)	Weights (%)					
		Current	Policy	Variance	Min	Max	Internal
Public Equity	41.7	33.7	32.0	1.7	25	39	52
Private Equity	19.7	15.9	16.0	-0.1	9	23	13
Real Assets	15.9	12.8	14.0	-1.2	7	21	16
Credit Strategies	18.6	15.1	16.0	-0.9	9	23	5
Diversifying Strategies	5.3	4.3	5.0	-0.7	2	10	0
Private Investment Partnerships (PIP)	2.1	1.7	2.0	-0.3	0	4	0
Exposure Management Portfolio (EMP)	1.1	0.9	0.0	0.9	0	6	0
Fixed Income	18.8	15.2	16.0	-0.8	12	23	95
Cash	1.4	1.1	2.0	-0.9	0	7	0
Leverage	-0.9	-0.7	-3.0	2.3	-4	0	0
<b>Total Fund (Net Market Value)</b>	<b>123.7</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	n.a.	n.a.	<b>37</b>
Total Fund (Gross Market Value)	124.6	100.7	103.0	-2.3	n.a.	n.a.	0

Exposures by Policy Groups

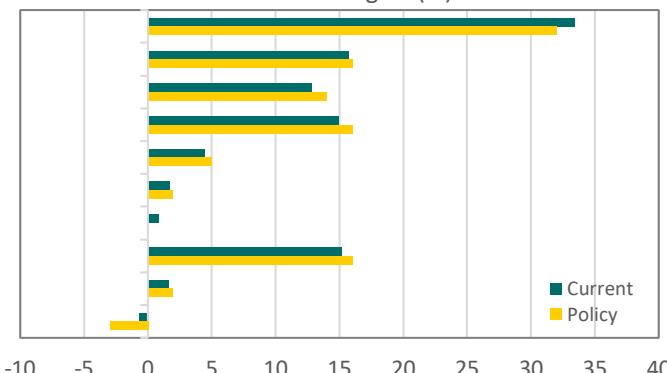
Public + Private Equity	61.3	49.6	48.0	1.6	38	58	n.a.
Fixed Income + Cash	20.2	16.3	18.0	-1.7	12	27	n.a.

- Total Fund includes the following amount held by the Treasurer of VA: \$ 65 million
- The values shown for each asset class on this report may reflect adjustments related to derivative positions in the Rebalance Account, pending transactions and certain accruals, in order to provide a more descriptive representation of the true economic exposure to each asset class (0 adjustments applied)
- The VRS Defined Benefit Plan Investment Policy Statement established the total fund tracking error range as the allowable observed tracking error calculated quarterly using 5 years of history as of 6/30/2025.
- Differences in totals are due to rounding

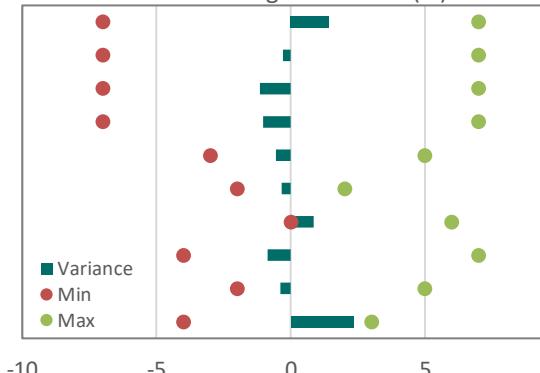
## Daily Asset Allocation Report

October 29, 2025

Absolute Weights (%)



Active Weights &amp; Limits (%)



Tracking Error (%)

5Yr Fund	2.4
5Yr Public	1.6

Asset Class	Billions (\$)	Weights (%)					
		Current	Policy	Variance	Min	Max	Internal
Public Equity	42.6	33.4	32.0	1.4	25	39	52
Private Equity	20.0	15.7	16.0	-0.3	9	23	14
Real Assets	16.4	12.8	14.0	-1.2	7	21	16
Credit Strategies	19.1	15.0	16.0	-1.0	9	23	5
Diversifying Strategies	5.7	4.5	5.0	-0.5	2	10	0
Private Investment Partnerships (PIP)	2.1	1.7	2.0	-0.3	0	4	0
Exposure Management Portfolio (EMP)	1.1	0.8	0.0	0.8	0	6	0
Fixed Income	19.3	15.1	16.0	-0.9	12	23	95
Cash	2.0	1.6	2.0	-0.4	0	7	0
Leverage	-0.9	-0.7	-3.0	2.3	-4	0	0
<b>Total Fund (Net Market Value)</b>	<b>127.3</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	<b>n.a.</b>	<b>n.a.</b>	<b>37</b>
Total Fund (Gross Market Value)	128.2	100.7	103.0	-2.3	n.a.	n.a.	0

## Exposures by Policy Groups

Public + Private Equity	62.6	49.1	48	1.1	38	58	n.a.
Fixed Income + Cash	21.3	16.7	18	-1.3	12	27	n.a.

- Total Fund includes the following amount held by the Treasurer of VA: \$ 434 million
- The values shown for each asset class on this report may reflect adjustments related to derivative positions in the Rebalance Account, pending transactions and certain accruals, in order to provide a more descriptive representation of the true economic exposure to each asset class (0 adjustments applied)
- The VRS Defined Benefit Plan Investment Policy Statement established the total fund tracking error range as the allowable observed tracking error calculated quarterly using 5 years of history as of 6/30/2025
- Differences in totals are due to rounding

Program	Action	Effective Date	Commitment/ Current Value	Funding/ Defunding Period	Description
Credit Strategies	Hired	08/29/2025	\$250 Million	5 years	<b>Barings Infrastructure Debt SMA</b> – A separately managed account that will invest in public and private infrastructure debt.
Credit Strategies	Hired	09/30/2025	€300 Million	5 Years	<b>ICG Europe IX</b> – A closed-end fund targeting subordinated debt and equity investments in European mid-market companies.
Exposure Management Portfolio	Hired	08/26/2025	\$45 Million	5 years	<b>ICONIQ</b> – A private placement in an AI related tech company.
Diversifying Strategies	Hired	10/01/2025	\$200 Million	Immediate	<b>Saba Capital Master Fund</b> – A multi-strategy hedge fund.

# Private Assets Program Reviews

K.C. Howell  
Managing Director

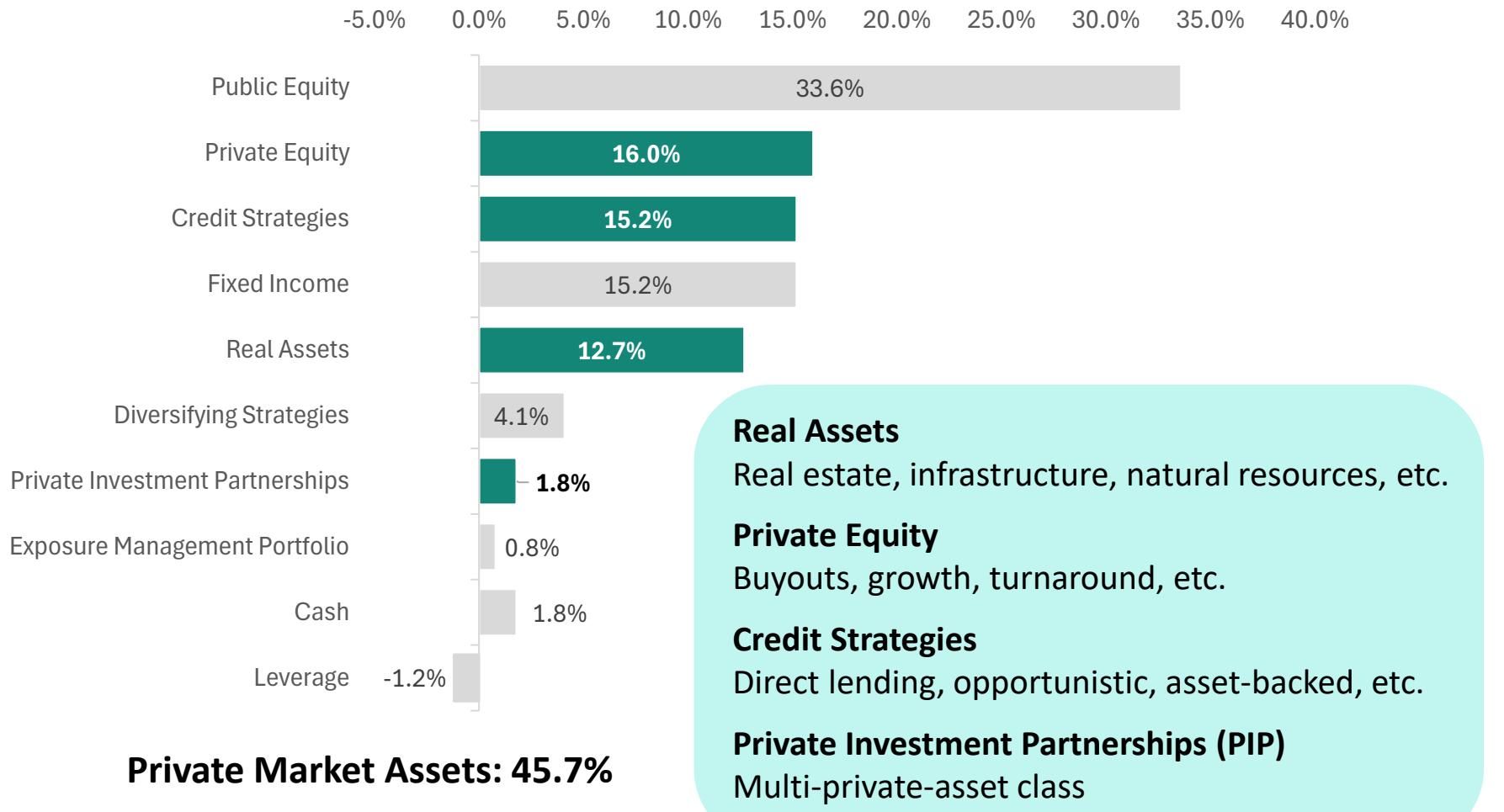


# Agenda:

## Private Assets Program Reviews

- Overview (K.C. Howell, Managing Director) 5 min
- Real Assets (Walker Noland, Program Director) 15 min
- Private Equity (John Alouf, Program Director) 15 min
- Credit Strategies (Steve Woodall, Program Director) 15 min
- Private Investment Partnerships (PIP) (Steve Woodall, Program Director)

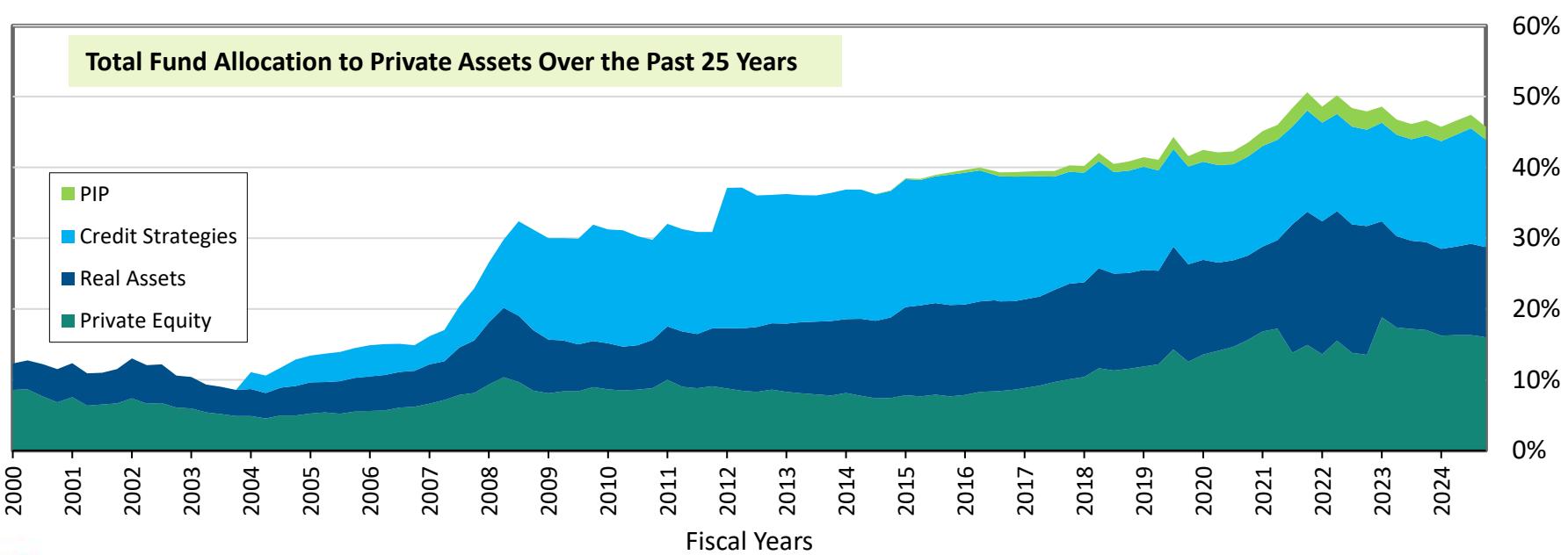
# Overview: What does VRS classify as Private Assets?



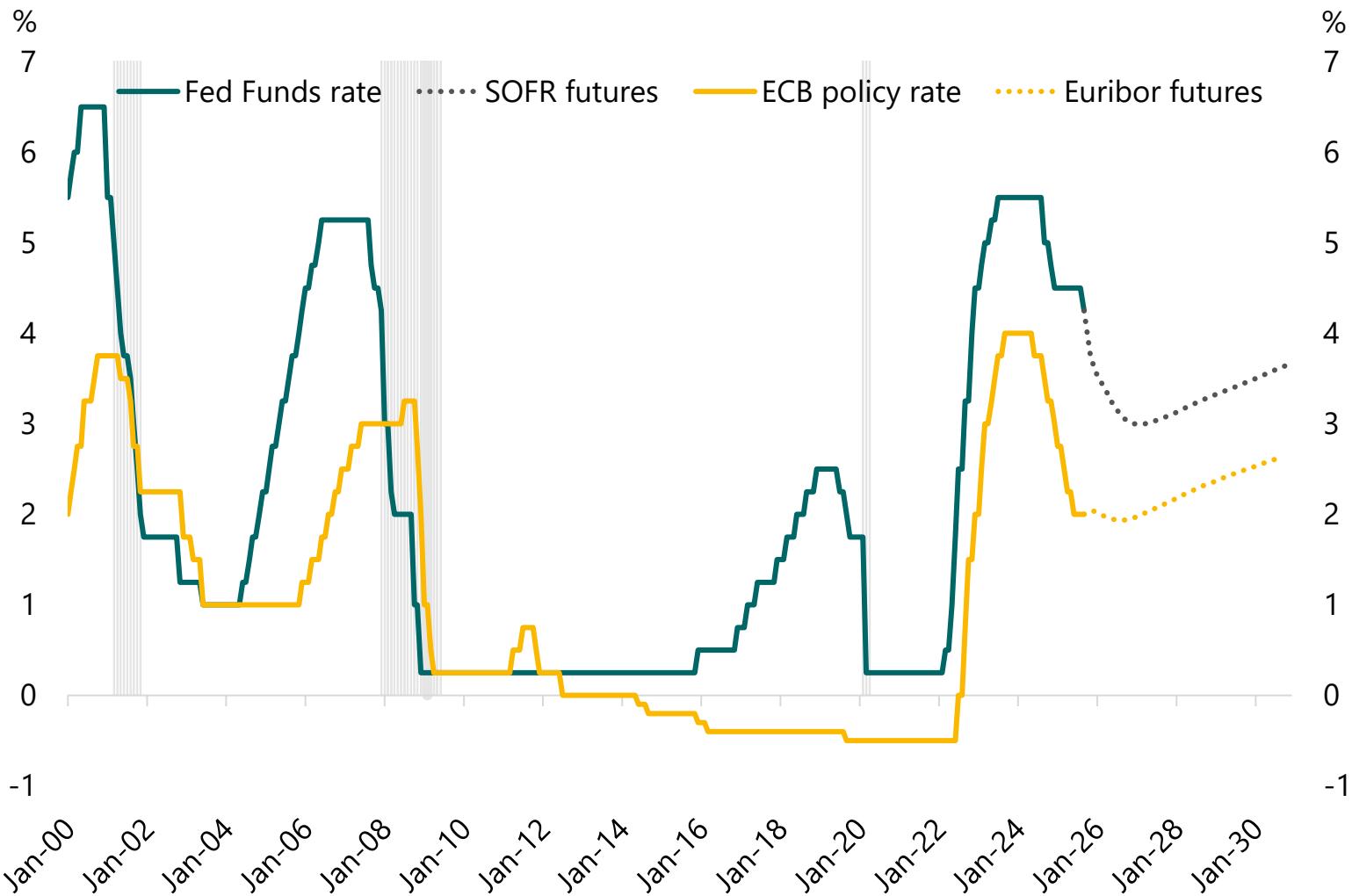
# Overview:

## Why Does VRS Invest In Private Assets?

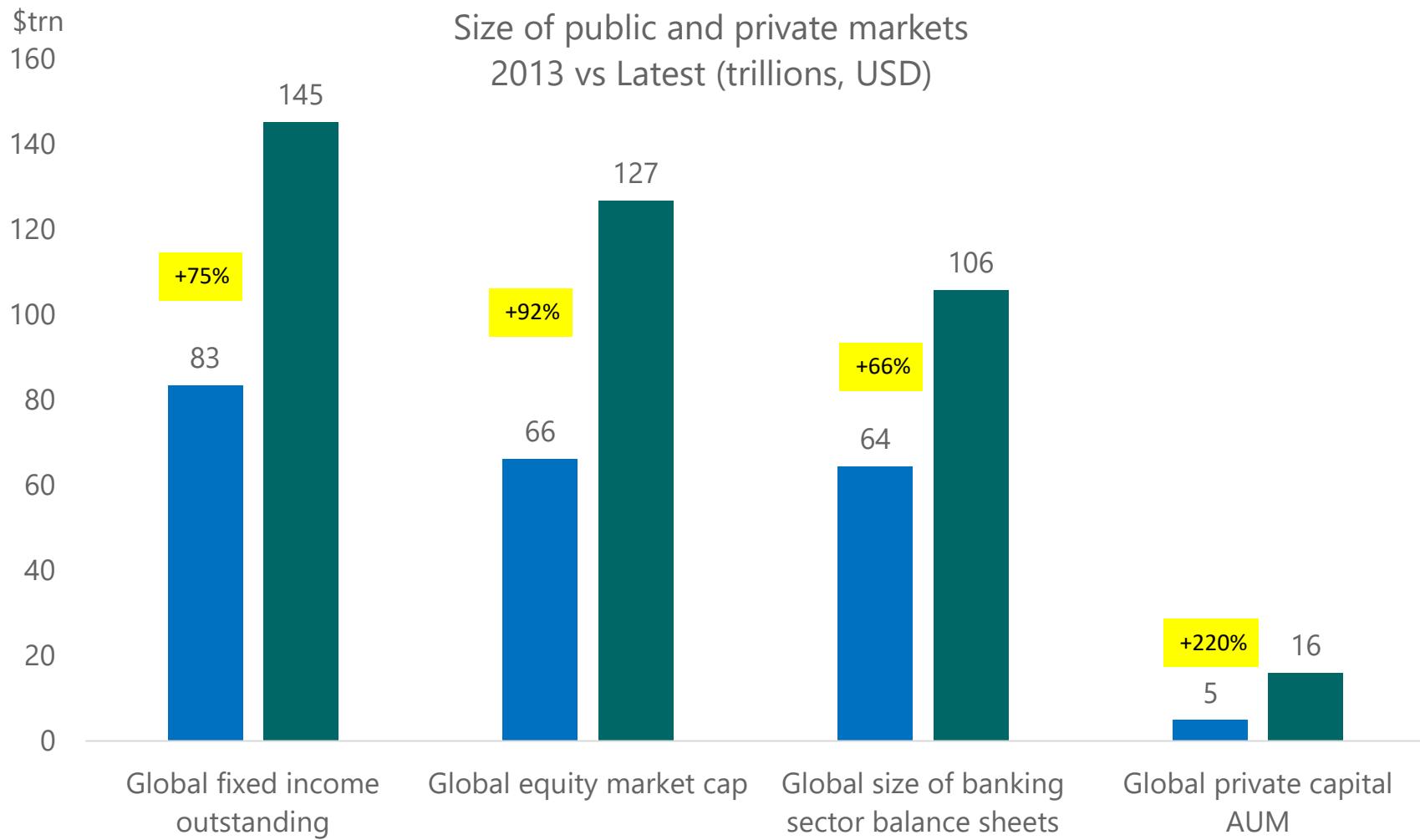
- Enhance absolute & relative returns
- Capture illiquidity premium
- Reduced risk via diversification
- Market migration from public to private



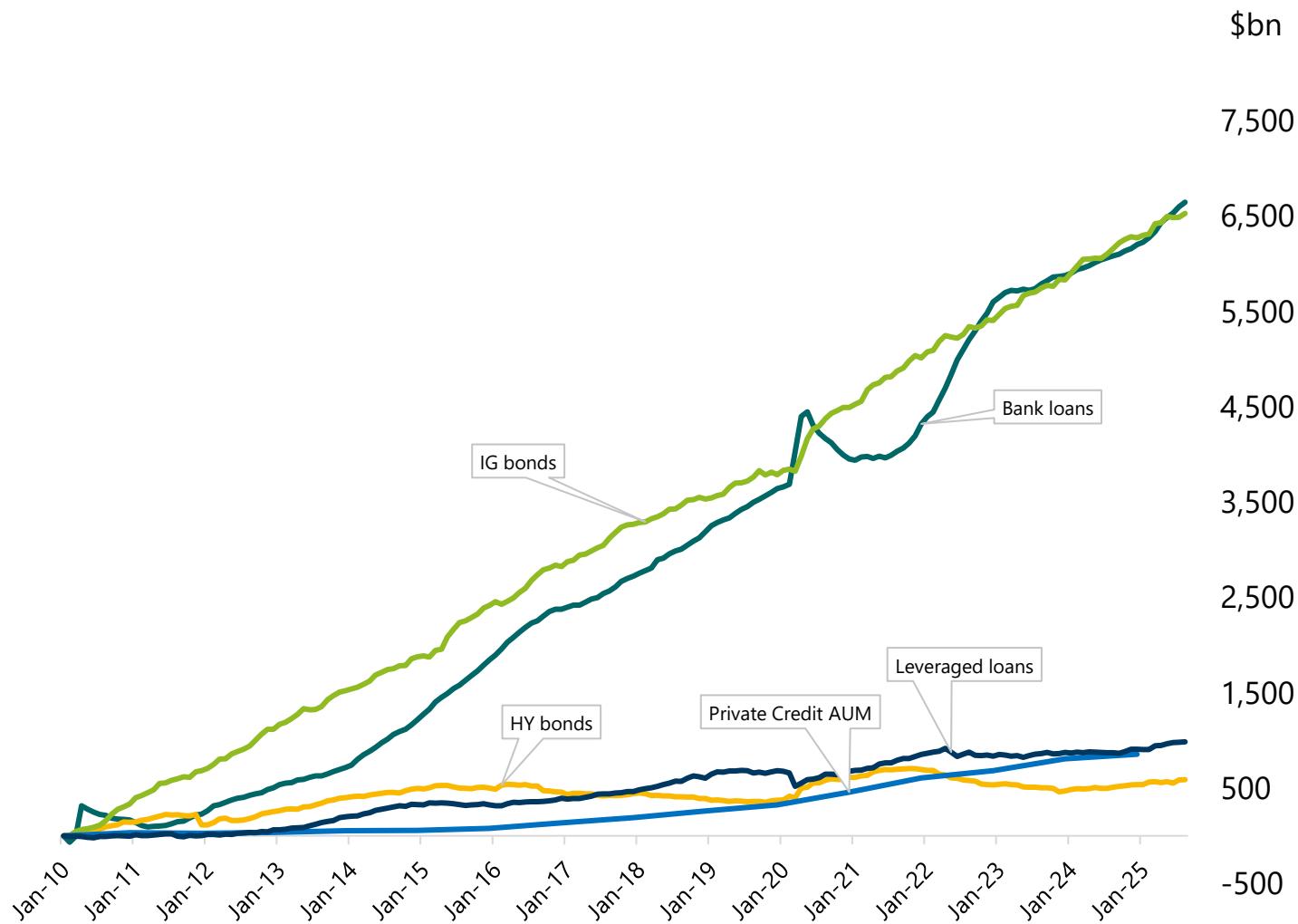
# Overview: Implications for higher interest rates for longer



# Overview: Growth of Public and Private Markets



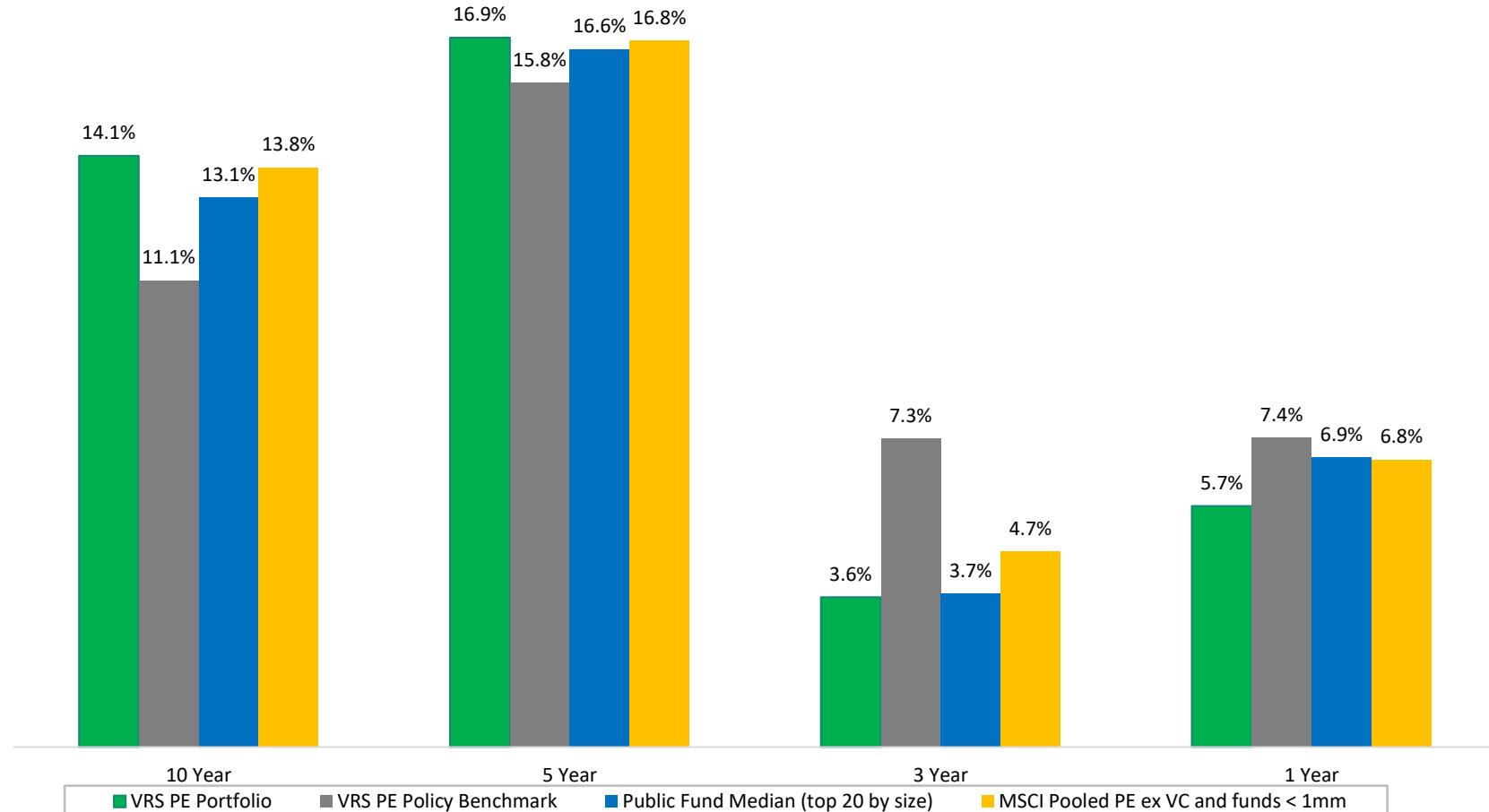
# Overview: Growth in U.S. Debt Outstanding



# Private Equity Perspectives

## Performance Comparisons

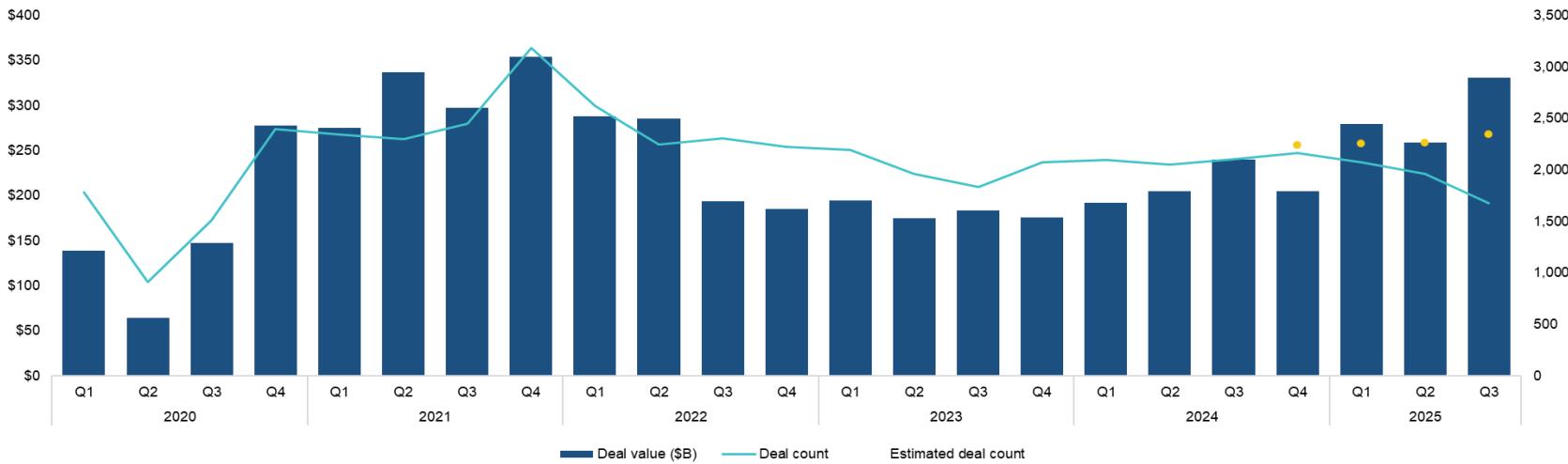
VRS Private Equity vs VRS Benchmark / Public Plans / Fund Universe (6/30/25)



# Private Equity Perspectives

## Deal and Exit Activity

US PE deal activity by quarter



US PE exit activity by quarter



# Real Assets

Walker Noland  
Program Director, Real  
Assets



# Agenda: Real Assets Annual Review Topics

- Overview
- Markets
- Exposures
- Results
- Co-investments
- Managers
- Looking Forward

# Overview:

## Team Members

Professional	Position	Highest Degree	Professional Certifications	Investment Experience	VRS Tenure
Walker Noland	Program Director	MBA	CFA	25	15
Tom Coleman	Senior Portfolio Manager	BS	CFA, CAIA	25	14
Warren Chang	Portfolio Manager	MBA, MS	CFA	28	10
Jummai Sarki-Hurd	Portfolio Manager	MBA, MS	-	19	12
Lee Buchanan	Investment Officer	BA	CAIA Level 1 – Pass	9	1
Kenneth Fleming	Investment Analyst	BBA	CFA Level 1 – Pass	2	1
Cecilia Jones	Portfolio Assistant	BA	-	1	1

# Overview: Objectives

- **Diversification** – historically low correlation to global equities as shown below
- **Competitive Returns** – strong historical returns
- **Cash Flow** – many investments tend to distribute cash quarterly
- **Inflation Linkages** – varies by sector & asset type, but some ability to pass through inflation

## Correlations

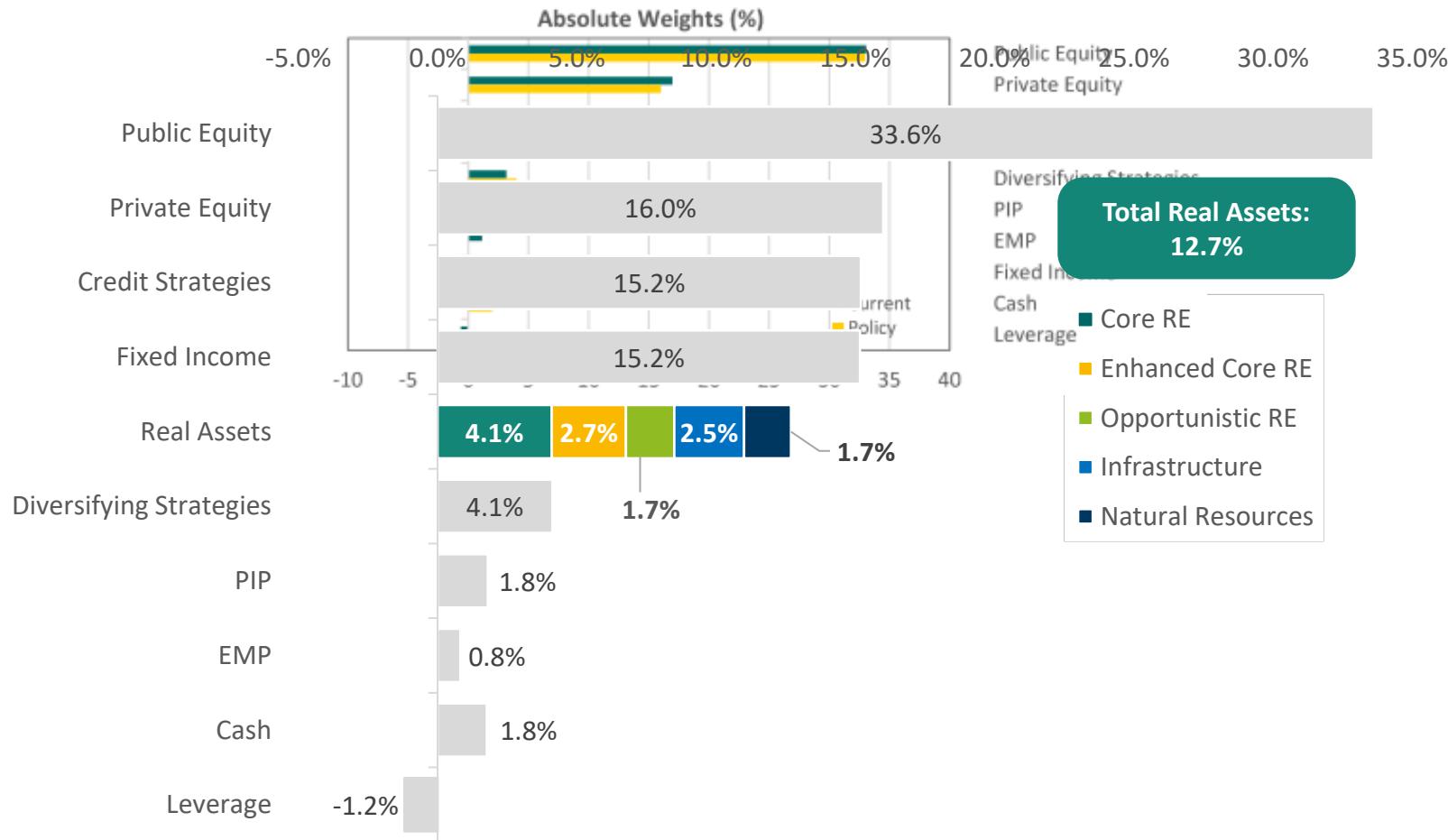
	Global REITs	U.S. Commercial Real Estate	Timberland	Farmland	Energy Equities	Mining Equities (ex. Gold & Silver)	Gold	Infra structure Equities	Global Equities	IG Corp Bonds	CPI
Global REITs	1.00										
Commercial Real Estate	0.32	1.00									
Timberland	0.04	(0.09)	1.00								
Farmland	0.22	0.06	0.28	1.00							
Energy Equities	0.46	0.16	0.34	0.24	1.00						
Mining Equities	0.62	0.17	0.26	0.16	0.72	1.00					
Gold	0.21	(0.06)	0.10	0.27	0.03	0.27	1.00				
Infrastructure Equities	0.84	0.29	0.10	0.27	0.61	0.69	0.27	1.00			
Global Equities	0.77	0.25	0.23	0.07	0.58	0.73	0.17	0.83	1.00		
IG Corp Bonds	0.16	(0.19)	0.19	(0.19)	(0.28)	(0.16)	0.45	0.22	(0.03)	1.00	
U.S. CPI	0.10	0.16	0.32	0.09	0.24	0.20	0.16	0.17	0.09	(0.17)	1.00

Source: Bloomberg (public markets data). NCREIF (private markets data).

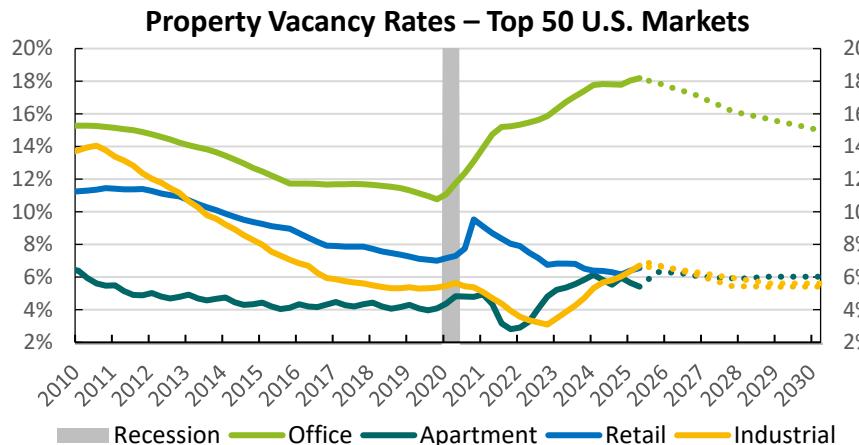
Notes: Private Commercial Real Estate returns de-smoothed. Correlations based on quarterly data, except Timberland and Farmland, which are based on annual data since those assets are generally appraised only once per year.

# Overview:

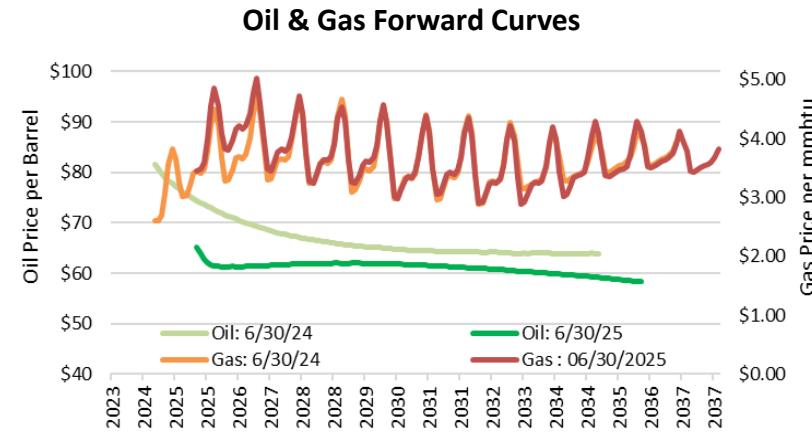
## Asset Allocation – 6/30/25



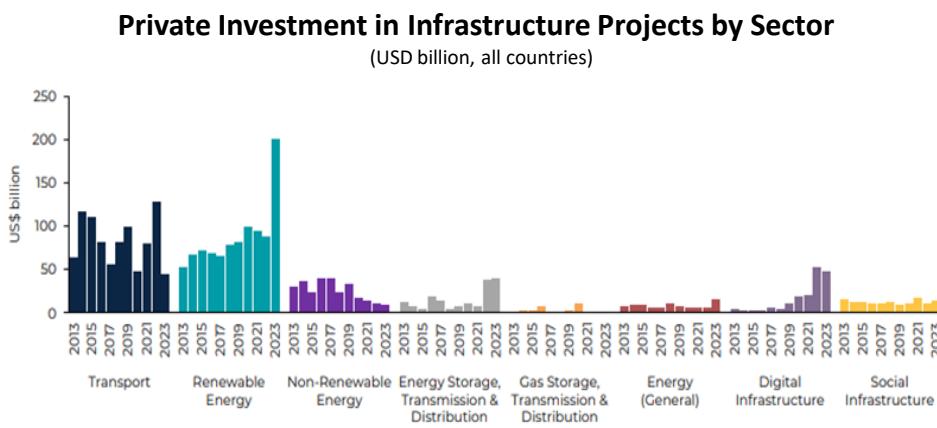
# Markets: Fundamentals



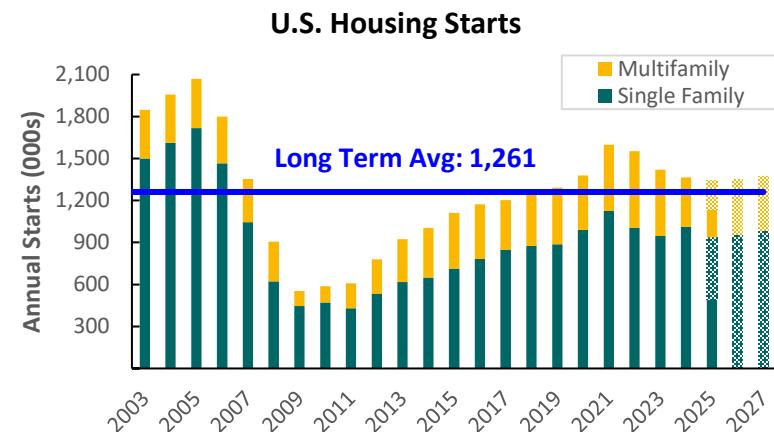
Sources: Green Street Advisors, Federal Reserve Bank of St. Louis as of June 2025



Source: Bloomberg



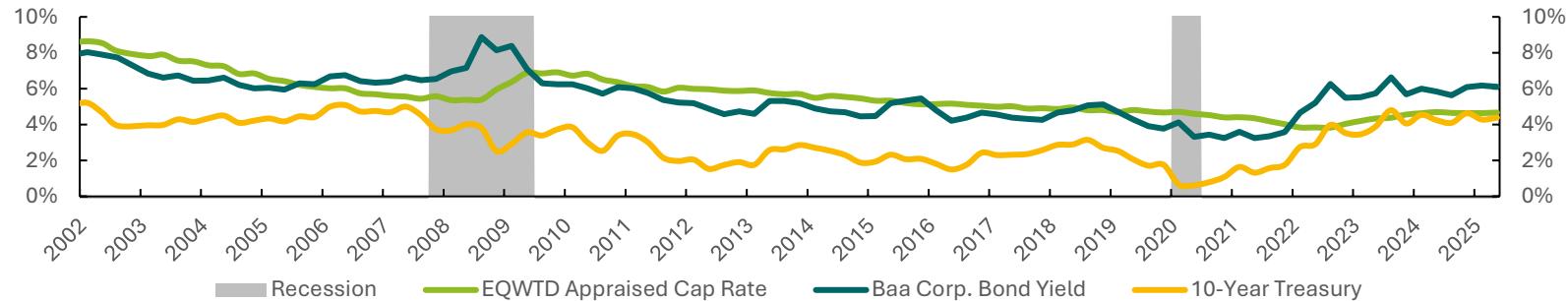
Source: GI Hub Infrastructure Monitor 2024



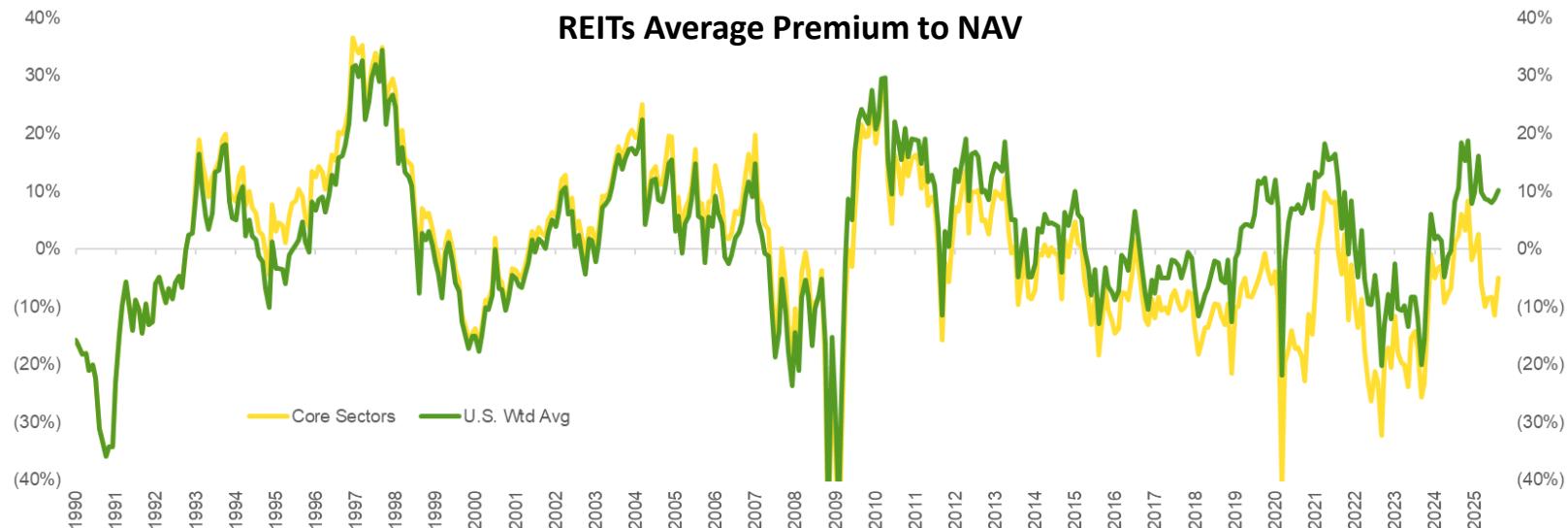
Sources: U.S. Census Bureau and U.S. Department of Housing and Urban Development, NAHB Forecast as of August 2025

# Markets: U.S. Cap Rates & REIT NAV Premiums

U.S. Cap Rates vs. Baa Bonds & 10-Year Treasuries



Sources: NCREIF All Properties Appraised Cap Rates, Moody's, Board of Governors of the Federal Reserve System

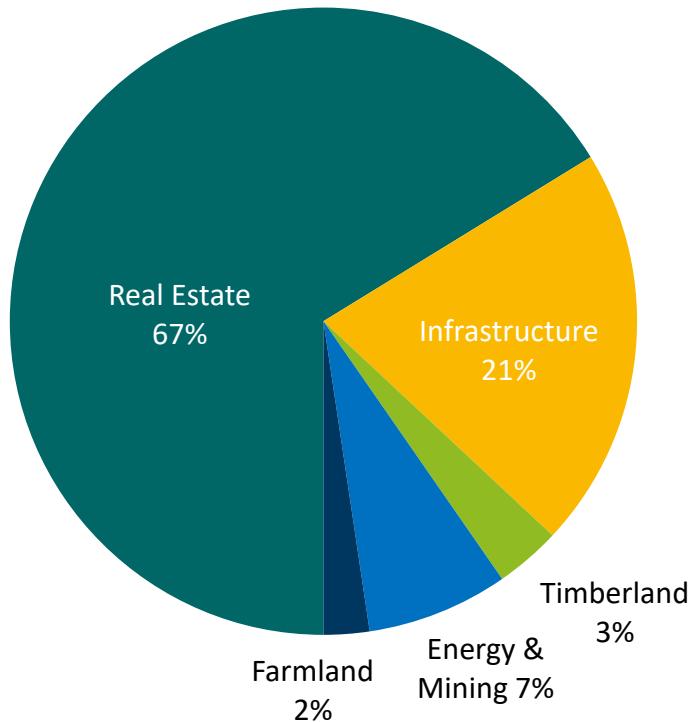


Source: Green Street Advisors

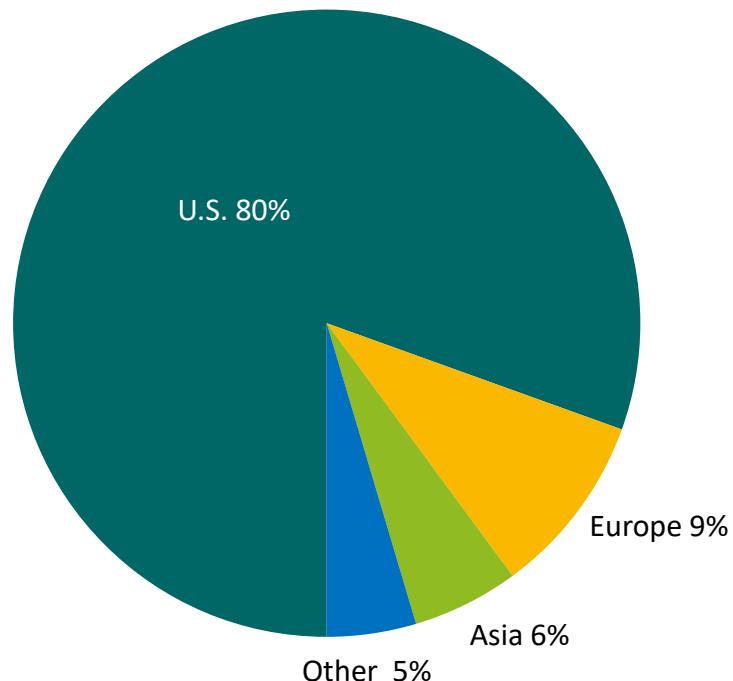
# Exposures: Sectors & Geography – 6/30/25

Current Market Value: \$15.7 Billion

Sectors

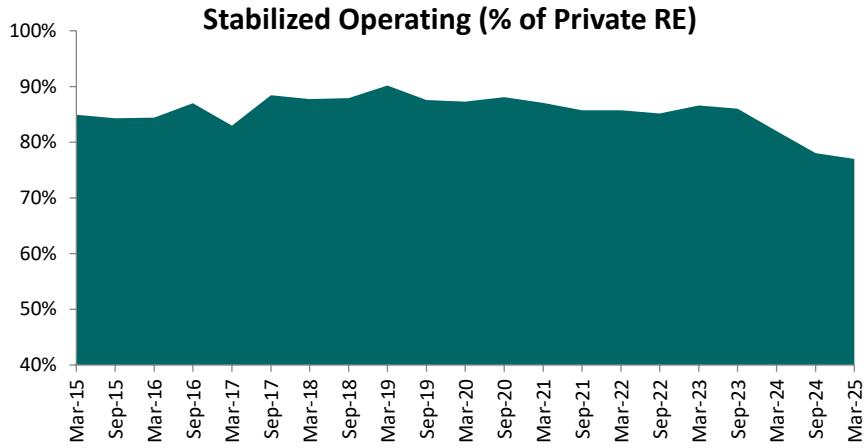
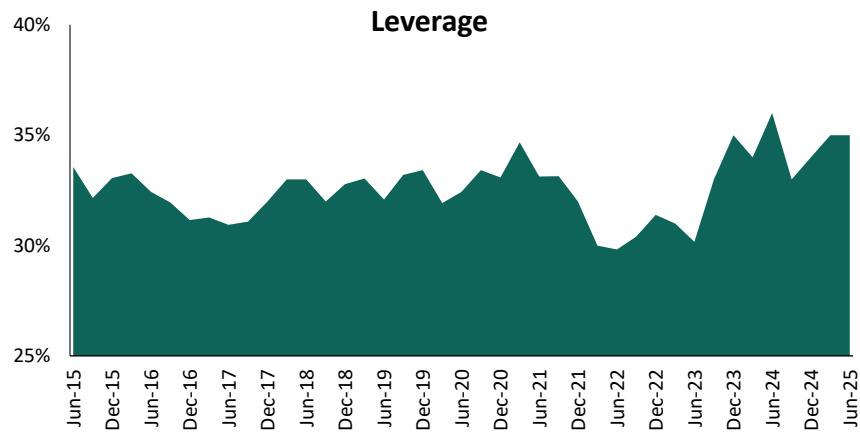
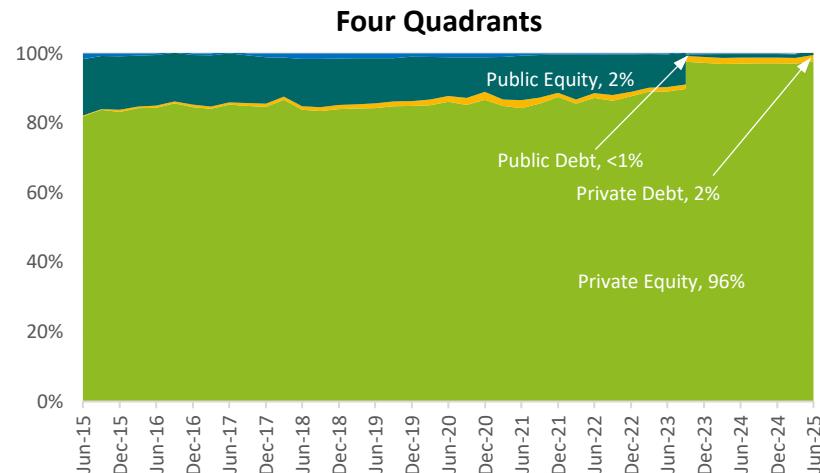
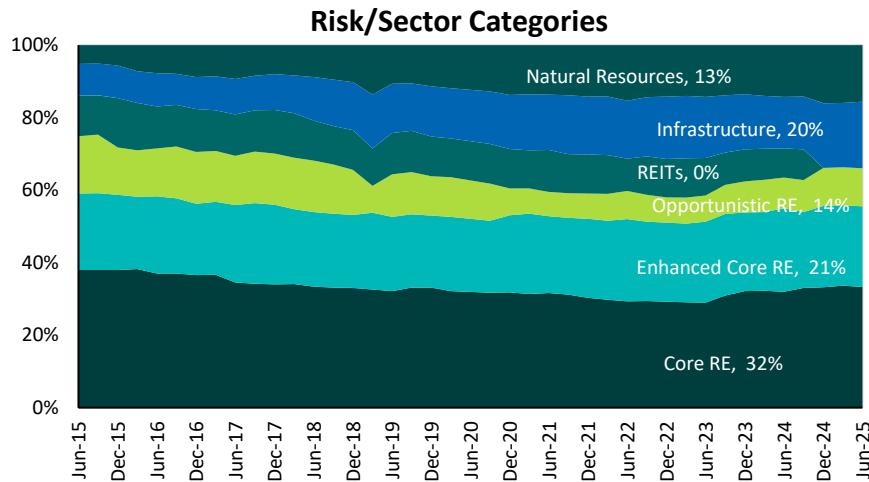


Geography



# Exposures:

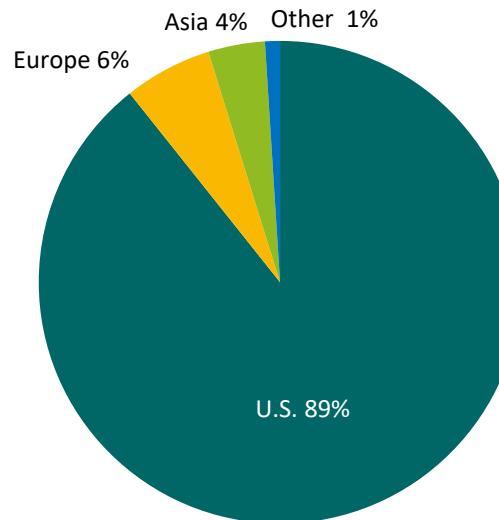
## Risk Metrics – 6/30/25



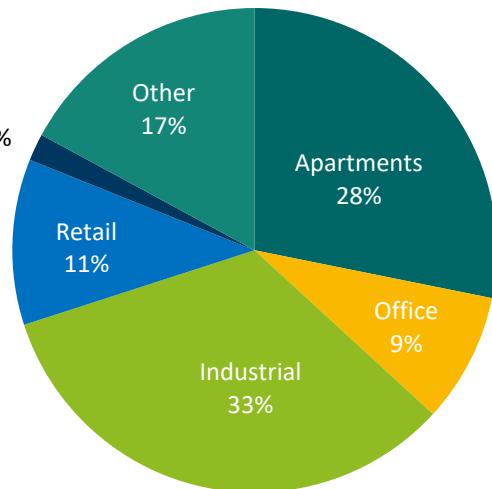
# Exposures:

## Real Estate – 6/30/25

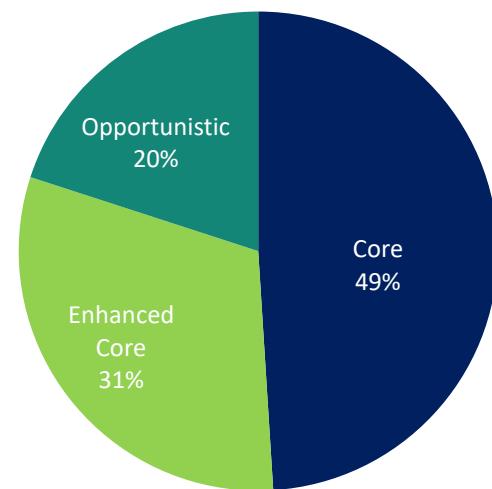
Geography



Property Type



Category



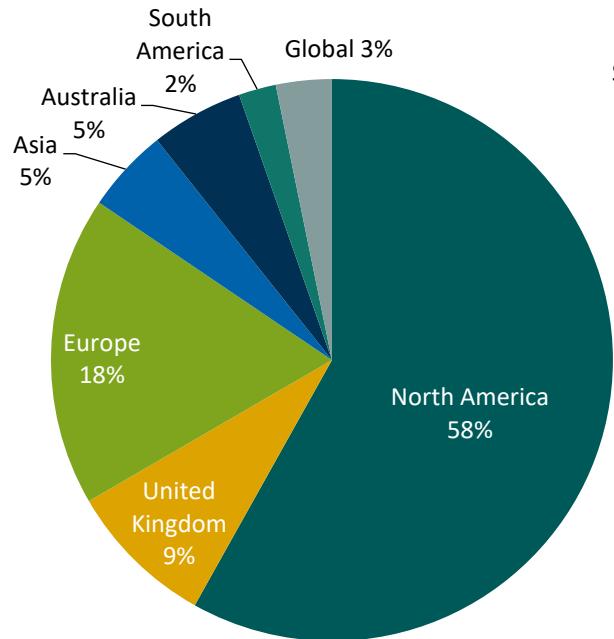
Market	# Accts.	Market Value (\$MM)	Market Value %	Unfunded Commitment/Allocation (\$MM)
Private	74	10,502	100	2,768

Source: BNY Mellon

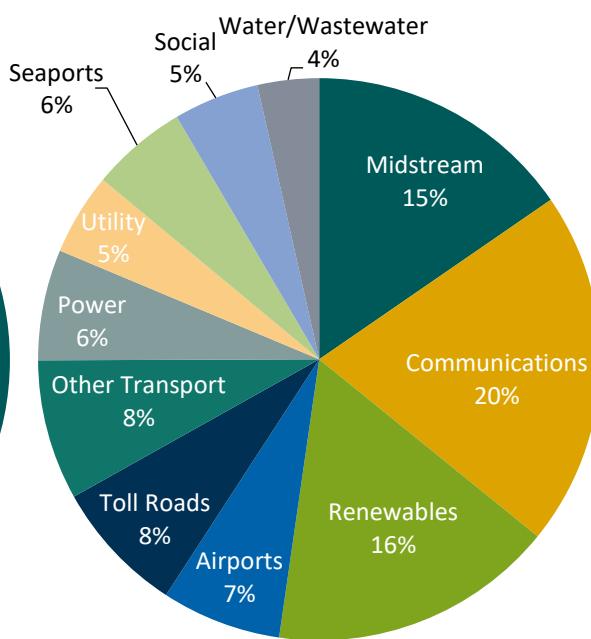
# Exposures:

## Infrastructure – 6/30/25

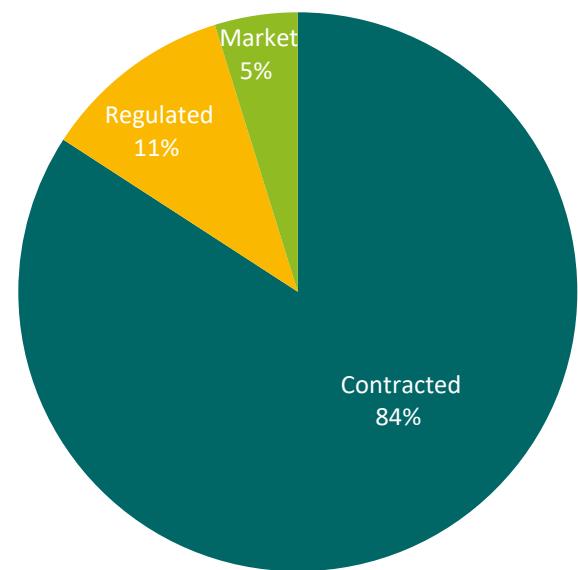
### Geography



### Sector



### Revenue Source

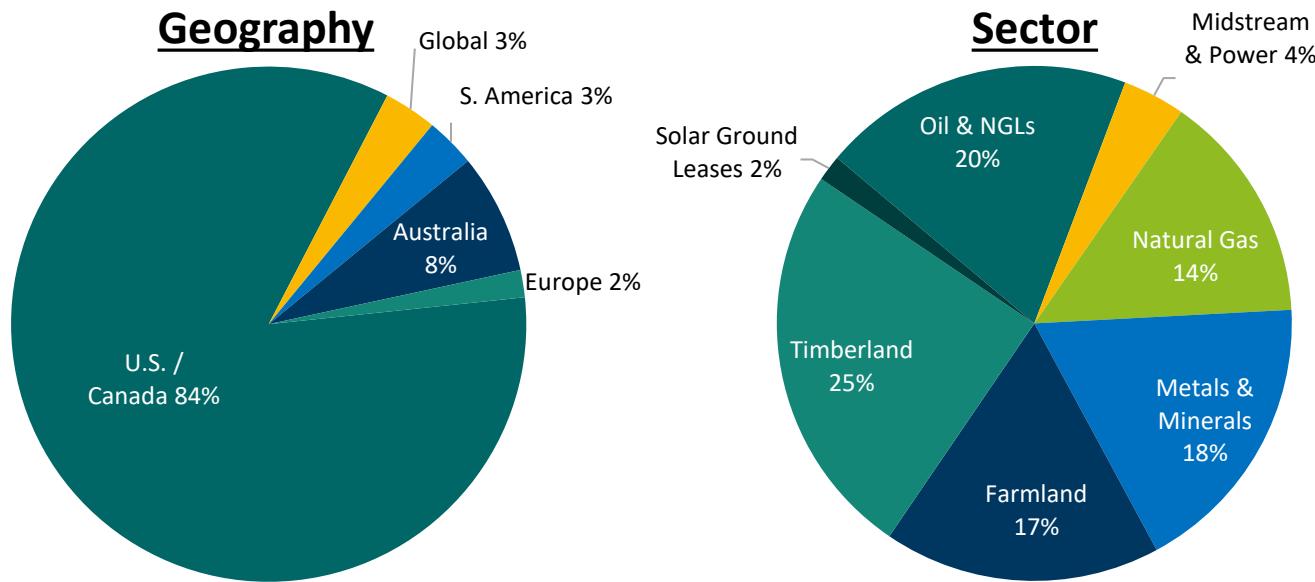


Market	# Accts.	Market Value (\$MM)	Market Value %	Unfunded Commitment/Allocation (\$MM)
Private	43	3,084	100	1,388

Source: BNY Mellon

# Exposures:

## Natural Resources – 6/30/25



Market	# Accts.	Market Value (\$MM)	Market Value %	Unfunded Commitment/Allocation (\$MM)
Private	35	2,003	97	1,083
Public	1	64	3	0
<b>Total</b>	<b>36</b>	<b>2,067</b>	<b>100</b>	<b>1,083</b>

Source: BNY Mellon

# Results:

## Portfolio Returns – 6/30/25

	10 Year	5 year	3 Year	1 Year	MV (\$MM)
<b>Total Real Assets</b>	<b>7.4</b>	<b>6.7</b>	<b>0.7</b>	<b>3.7</b>	<b>15,653</b>
Strategic Benchmark	5.4	3.9	-1.3	2.9	
Excess Return	2.0	2.8	2.0	0.8	
<b>Private Real Estate</b>	<b>7.6</b>	<b>5.9</b>	<b>-0.6</b>	<b>2.4</b>	<b>10,502</b>
Benchmark	4.7	2.0	-5.1	1.2	
Excess Return	2.9	3.9	4.5	1.2	
<b>Infrastructure</b>	<b>10.6</b>	<b>10.1</b>	<b>6.2</b>	<b>9.2</b>	<b>3,084</b>
Benchmark	7.1	8.4	7.6	6.4	
Excess Return	3.5	1.7	-1.4	2.8	
<b>Natural Resources</b>	<b>5.5</b>	<b>8.7</b>	<b>1.2</b>	<b>2.3</b>	<b>2,067</b>
Benchmark	7.1	8.4	7.6	6.4	
Excess Return	-1.6	0.3	-6.4	-4.1	

Source: BNY Mellon

# Results: FY 2025

## Tailwinds/Headwinds

- +** **Tailwinds:** Diversity of the Real Assets portfolio
  - Accretive allocations across markets and property types in Real Estate
  - Strong rebound in Infrastructure performance
- **Headwinds:** Muted recovery in most Real Asset valuations
  - Few transactions, few distributions

### Largest Absolute Return Contribution:

	% Contribution	% of Program
Infrastructure	1.81%	20%
Core RE	1.53%	33%
Opportunistic RE	0.48%	14%
Timberland	0.19%	3%
Farmland	0.07%	2%
Energy & Mining	0.04%	7%
Enhanced Core RE	-0.38%	21%
<b>Total Real Assets</b>	<b>3.74%</b>	<b>100%</b>

### Largest Relative Return Contribution:

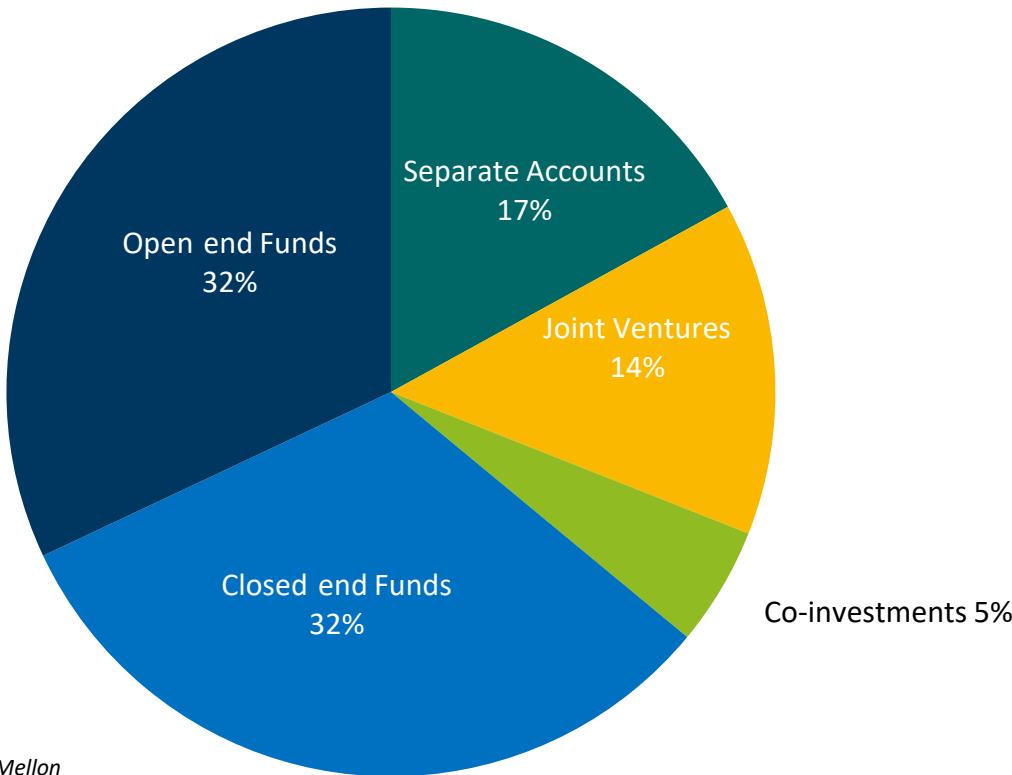
	% Contribution	% of Program
Core RE	1.14%	33%
Infrastructure	0.55%	20%
Opportunistic RE	0.31%	14%
Timberland	-0.03%	3%
Farmland	-0.09%	2%
Energy & Mining	-0.43%	7%
Enhanced Core RE	-0.63%	21%
<b>Total Real Assets</b>	<b>0.82%</b>	<b>100%</b>

Note: Exact figures vary due to rounding. Source: BNYM June 2025.

# Co-investments: Real Assets Approach

- Objective is to fine-tune portfolio exposures and sector allocations by investing incremental capital alongside existing managers, generally with lower (or no) fees. Targeting approx. 1% (of RA program) in new activity per year
- Target investment size of +/- \$30MM per co-investment
- Real Assets team member responsible for the manager relationship runs point on co-investment activity from that manager. Deal teams formed as needed
- VRS staff makes the go/no-go call on investments in consultation with CIO and Director of Private Markets. Investment authority sits with CIO
- Manager remains fiduciary
- Continual evaluation of co-investment processes across Private Assets for more consistency within VRS

# Co-investments: Structure – 6/30/25



Source: BNY Mellon

Sector	Fiscal Year 2025 Commitments
Private RE	One Co-investment – \$100 Million
Infrastructure	Two Co-investments – \$62 Million

# Managers: Top 10 Investment Managers

Manager	# of Mandates	% of Program
PGIM	3	11.2%
Blackstone	12	7.9%
Morgan Stanley	4	7.0%
Clarion	1	5.8%
Industry Funds Management	3	4.9%
Carson Companies	4	3.9%
Pantheon Ventures	4	3.8%
Pritzker Realty Group*	2	3.4%
Harrison Street	3	3.2%
Global Infrastructure Partners	5	2.8%

\*DIME (Diverse Investment Management Engagement) firm

# Managers: Diverse Investment Management Engagement (DIME)

Resources				
Townsend	Artemis	Hamilton Lane	Pantheon	Aksia
<ul style="list-style-type: none"> <li>▪ Real Estate</li> <li>▪ Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Real Estate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Real Estate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Infrastructure</li> <li>▪ Nat Resources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Infrastructure</li> <li>▪ Nat Resources</li> </ul>

**17 interactions with 15 potential DIME managers in the 12 months ending 6/30/2025**

Manager	Sector	Vintage	Comm./Alloc. (\$MM)
Capri/EGM JV	Real Estate	2014	300
Grain Infra	Infrastructure	2012	75
Pritzker JV	Real Estate	2012	232
Pritzker JV II	Real Estate	2015	200
Sheridan Production Partners III	Natural Resources	2014	72
<b>Total</b>			<b>879</b>

Note: In addition to chart above, Real Assets had two additional DIME fund managers within the Artemis Income & Growth II Separately Managed Account as of June 30.

# Looking Forward

- Continue active portfolio management – especially given ongoing uncertainty with market conditions
- Focus on objectives & risk
- Prudent work in continuing to close the underweight to our targeted allocation. Staff being creative to find opportunities in the current market environment

# Private Equity

John Alouf  
Program Director



# Agenda:

# Private Equity Annual Review Topics

- Overview
- Markets
- Exposures
- Results
- Managers
- Co-investments
- Looking Forward

# Overview:

## Team Members

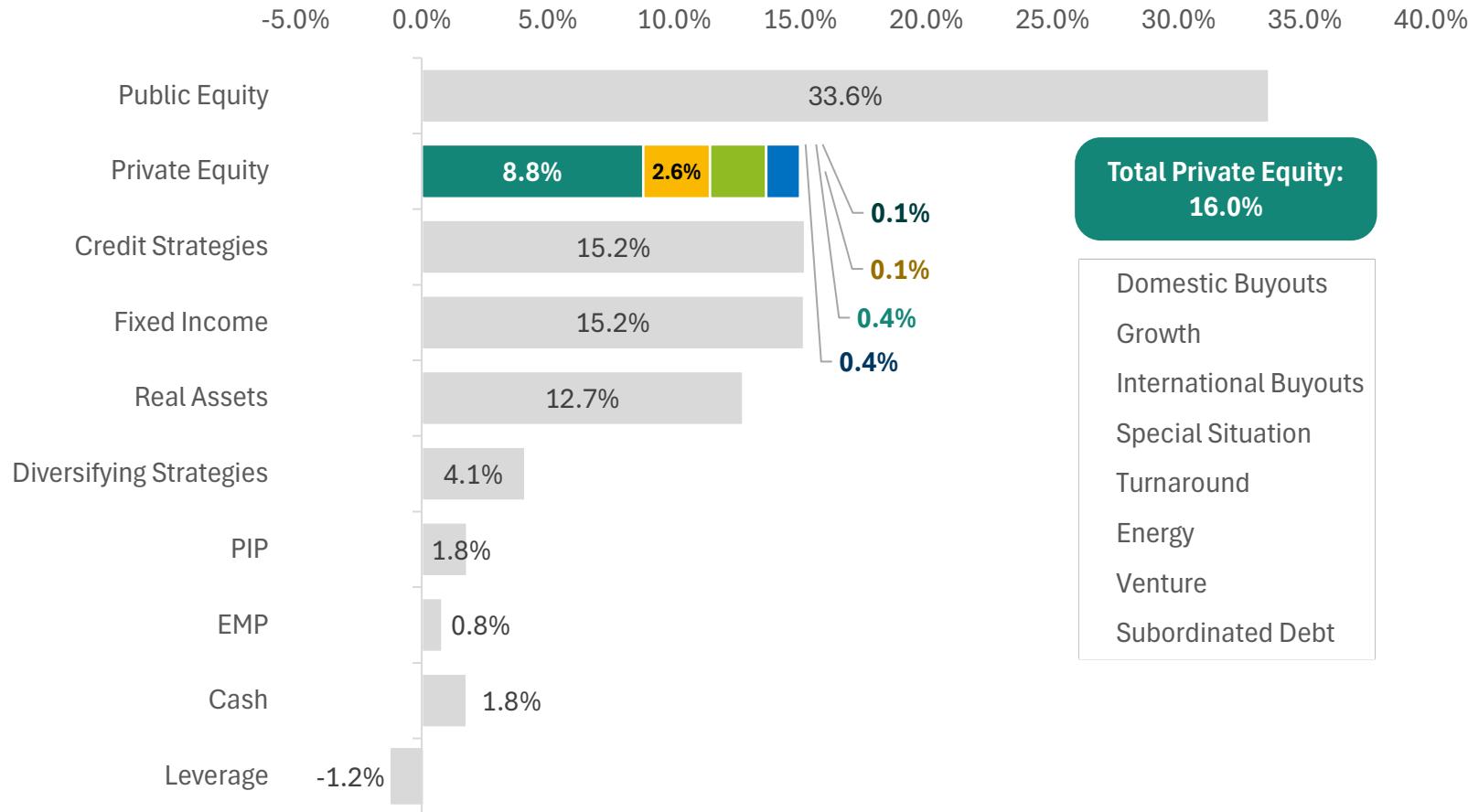
Professional	Position	Highest Degree	Professional Certifications	Investment Experience	VRS Tenure
John Alouf	Director	MBA	CFA	31	25
Peter Murphy	Senior Portfolio Manager	BBA	CFA	25	14
Rob Voeks	Senior Portfolio Manager	PhD		28	11
De'Von Jones	Senior Investment Officer	BBA	CFA	15	6
Viet Tran	Investment Officer	MS	CFA	5	4
Trib Singh	Senior Investment Analyst	MS		3	<1
Cecilia Jones	Portfolio Assistant	BA		1	1

# Overview: Philosophy

- Private equity is an active ownership strategy. The allocation is expected to achieve a meaningful long term return premium over the public equity market.
- Allocate capital to managers & strategies in which we have a high degree of confidence, not necessarily to the asset class.
- Disciplined annual commitments helps dampen the impact of market peaks.

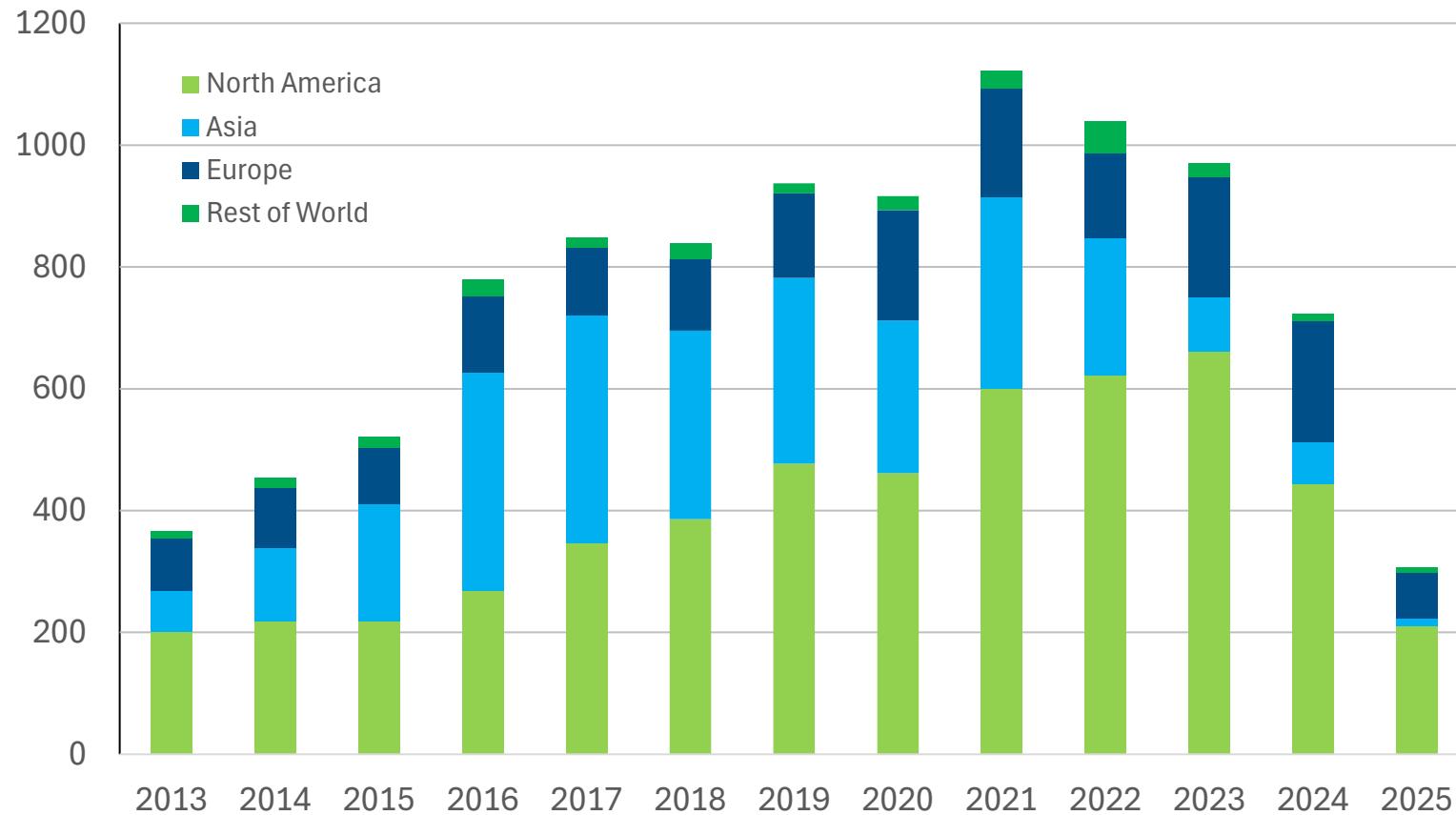
# Overview:

## Asset Allocation – 6/30/25



# Markets:

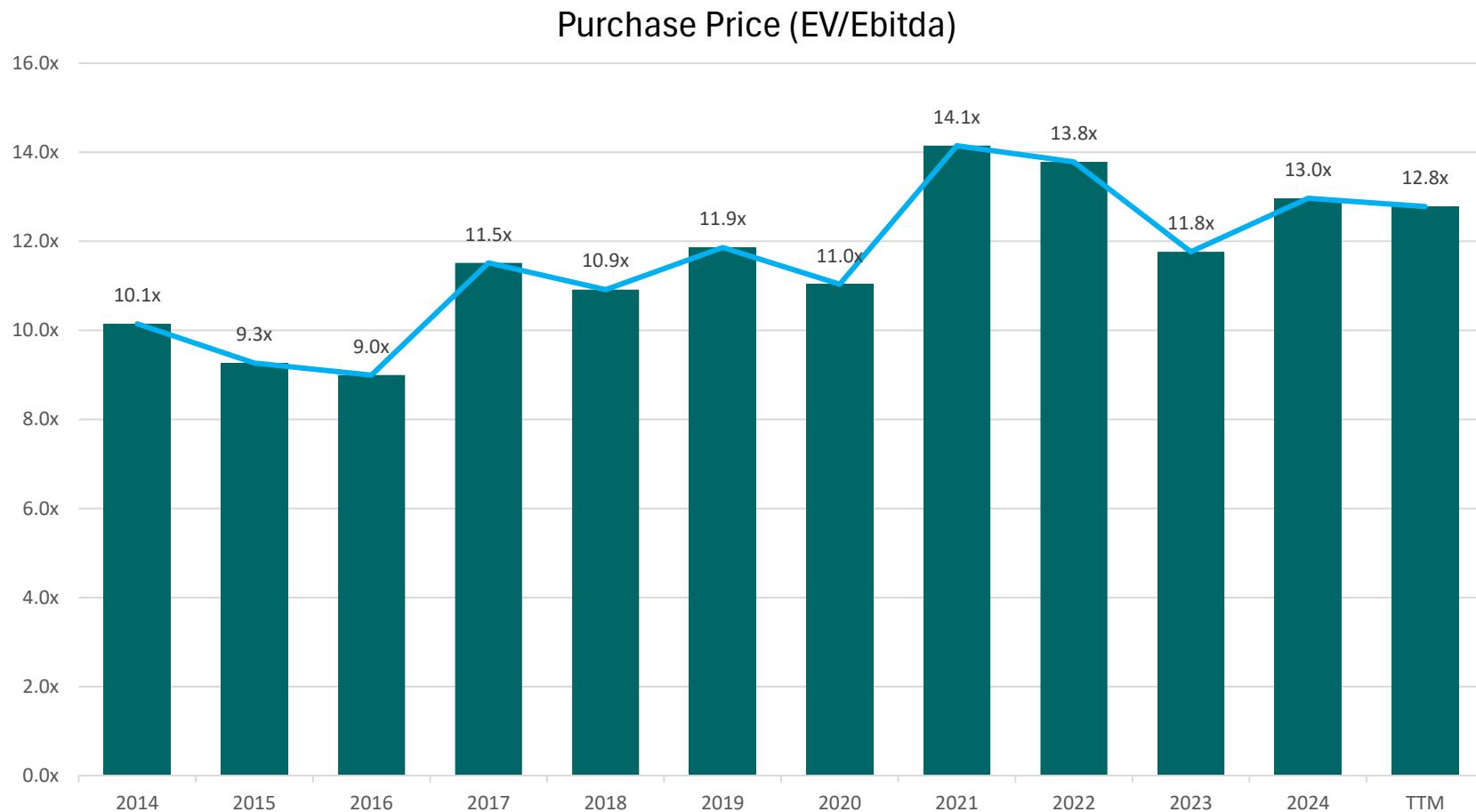
## Global Private Equity Fundraising (\$B)



Source: Preqin.

Note: 2025 is through the first six months of the year.

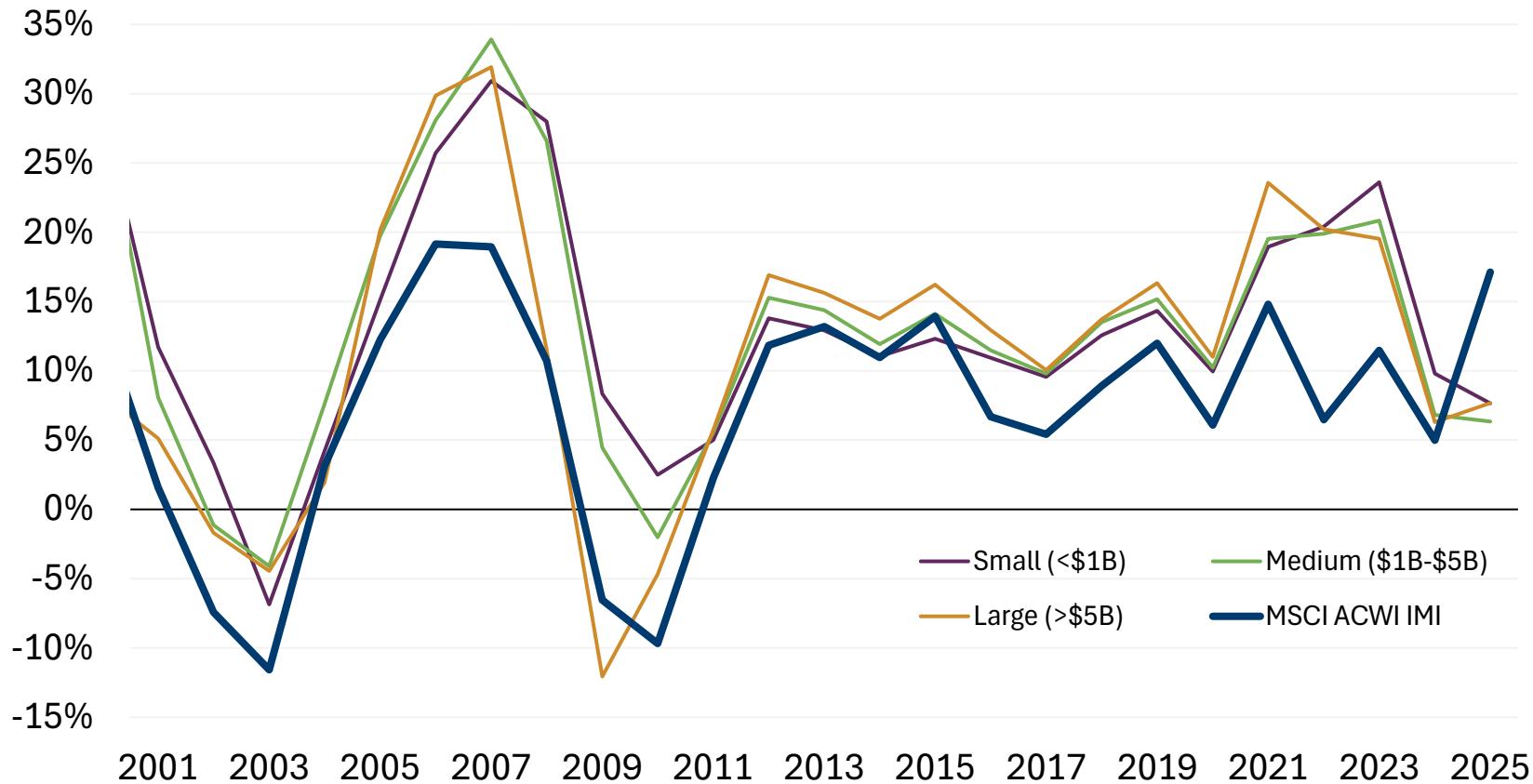
# Markets: North America Buyout Statistics



Source: GCM Grosvenor, Pitchbook (6/30/25)

# Markets:

## Rolling 3-Year Returns By Fund Size



Source: PrivateIQ/Burgiss – Global Private Equity and MSCI information.

Note: Rolling 3-year returns end 6/30 of each year.

# Markets: Existing Investments & Liquidity

## ■ Existing Investments

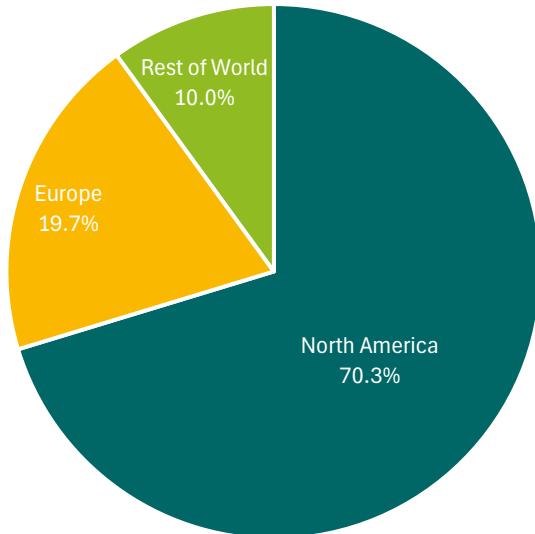
- Valuations in line with expectations.
- Growth has slowed but companies overall are performing.
- Go forward returns appear attractive.

## ■ Liquidity

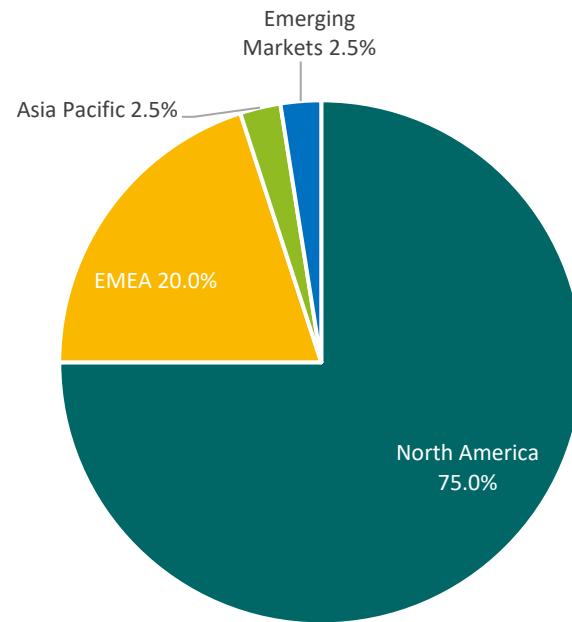
- Increasing
- Premier assets are the most actionable

# Exposures: VRS vs. Benchmark

**VRS Private Equity**



**Custom MSCI ACWI IMI**

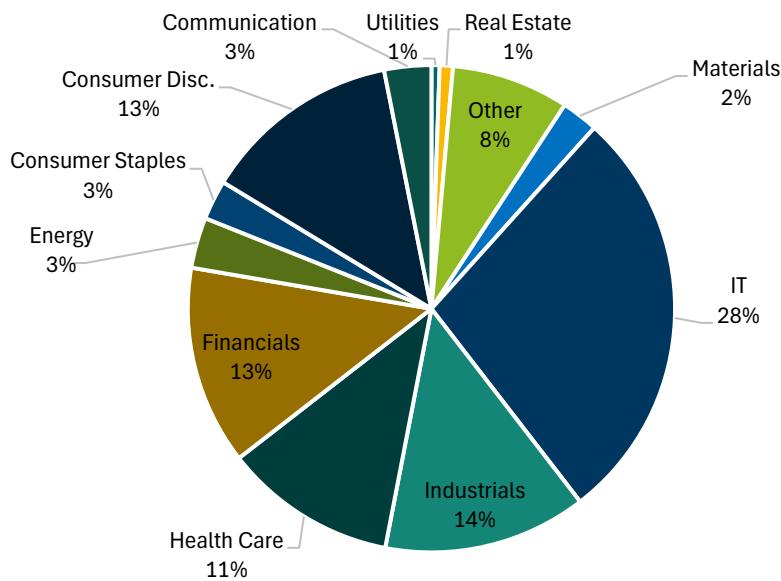


Information based on 6/30/2025 manager information.

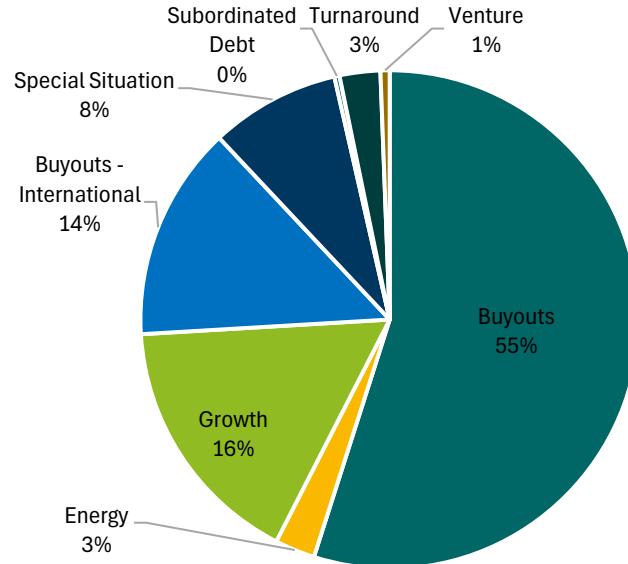
# Exposures:

## Position Weighting

Industry



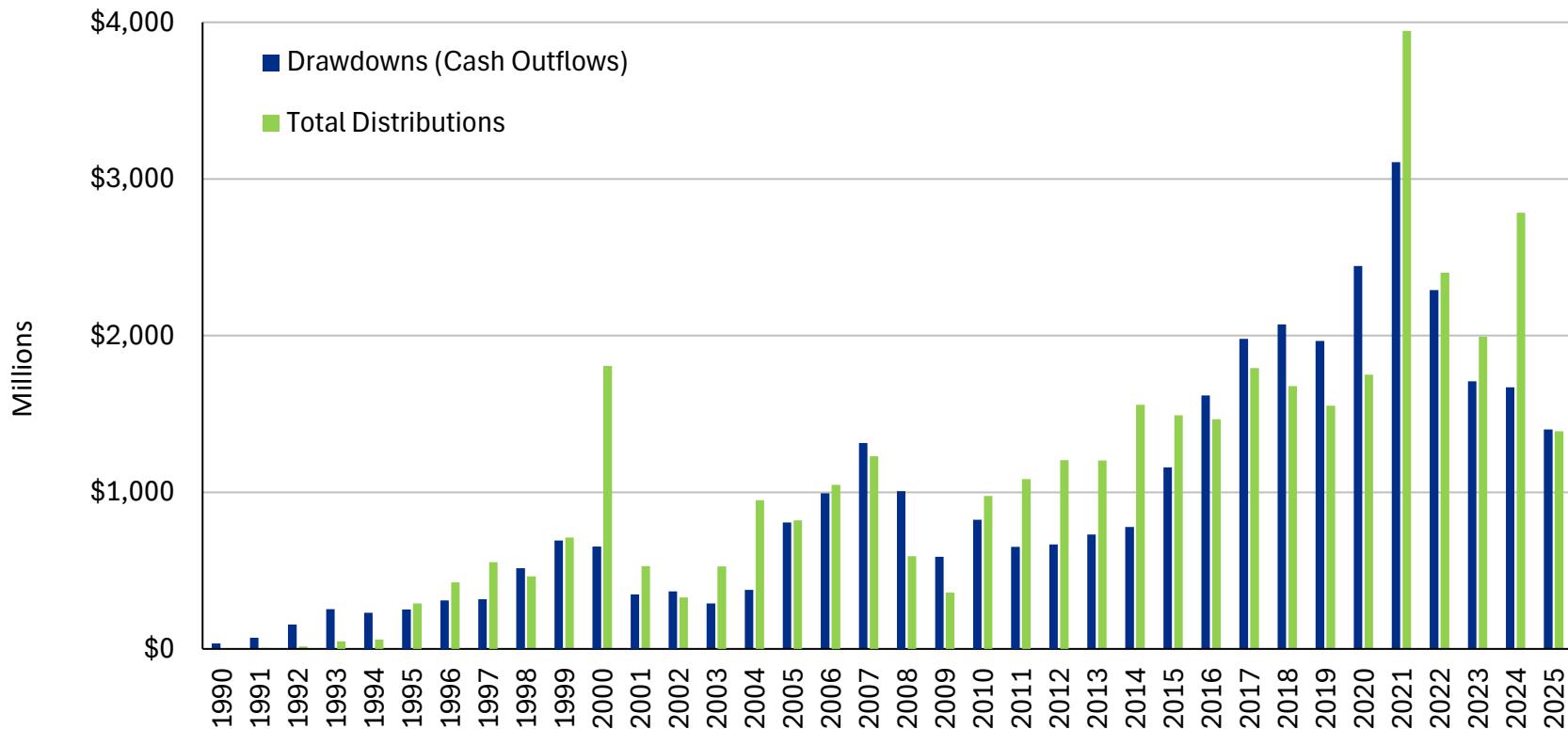
Sector



*Industry chart based on 6/30/2025 manager information. Sector chart based on 6/30/2025 BNY Mellon information.*

# Results:

## Annual Cash Flows (\$MM)



Since inception net cash flow to VRS of \$4.3 billion

Note: 2025 is through the first eight months of the year.

# Results:

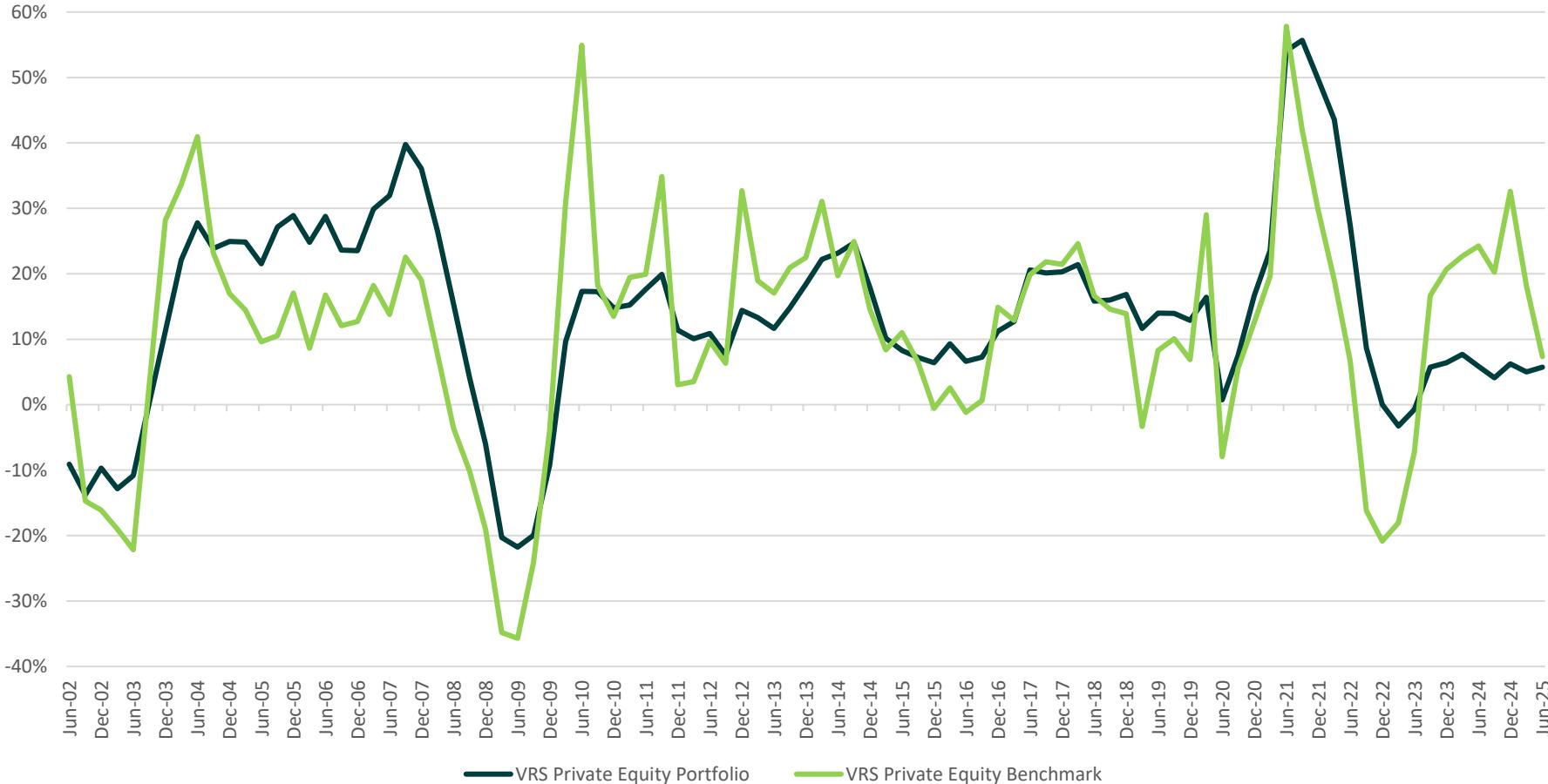
## Time-Weighted Performance – 6/30/25

	10 Year	5 year	3 Year	1 Year	MV (\$MM)
Total Private Equity	14.1	16.9	3.6	5.7	<b>19,643</b>
Strategic Benchmark*	11.1	15.8	7.3	7.4	
<b>Excess Return</b>	<b>3.0</b>	<b>1.1</b>	<b>-3.7</b>	<b>-1.7</b>	
Buyouts	15.7	17.5	3.6	3.7	10,786
Energy	1.5	13.2	9.9	11.9	511
Growth	20.0	20.3	1.3	9.2	3,249
Int'l Buyout	13.0	15.0	3.8	12.1	2,739
Special Situations	12.5	13.8	4.3	2.6	1,655
Sub Debt	13.9	12.3	8.4	6.7	66
Turnaround	10.9	17.8	3.2	1.4	518
Venture	10.0	19.1	-7.4	5.9	117

Note: \*Benchmark: Russell 3000 + 250 basis points through 6/30/2013; MSCI ACWI 50% hedged + 250 basis points through 6/30/2020; MSCI ACWI IMI through 12/31/2023; MSCI ACWI IMI Special Weighted (75% North America, 20% Europe, and 5% Asia and Emerging Markets) thereafter. Strategic benchmark is lagged three months to match the delay in private equity reporting.

# Results:

## Rolling One-Year Returns



# Results: Headwinds/Tailwinds

## ▪ Tailwinds

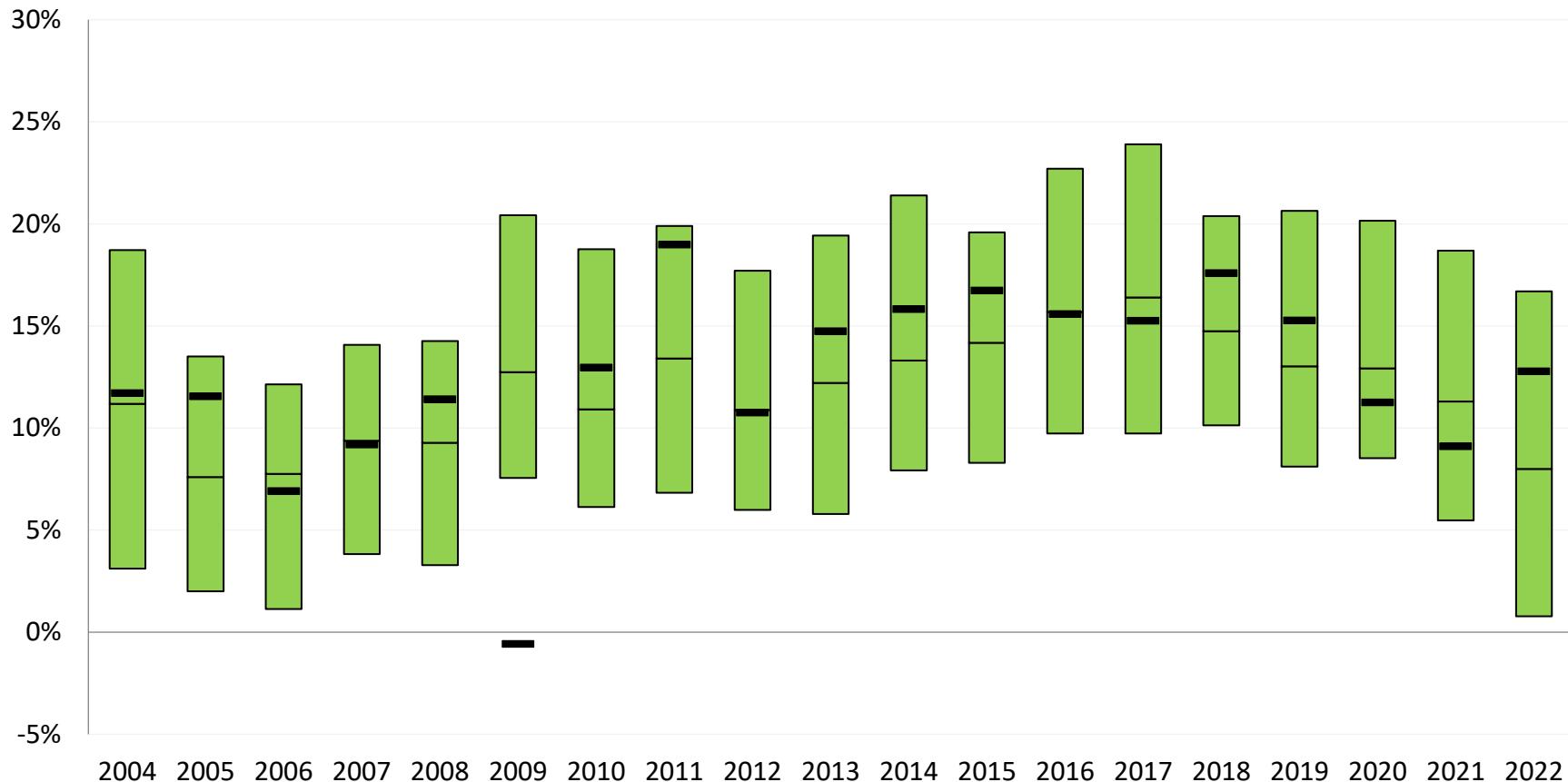
- Companies with recurring revenue
- Muted tariff implications
- Decreasing interest rates
- Overallocated LPs

## ▪ Headwinds

- Slowing economic growth
- Emergence of evergreen structures
- Uncertainty calibrating AI risks
- Strong public equity returns

# Results:

## VRS Relative IRR By Vintage Year

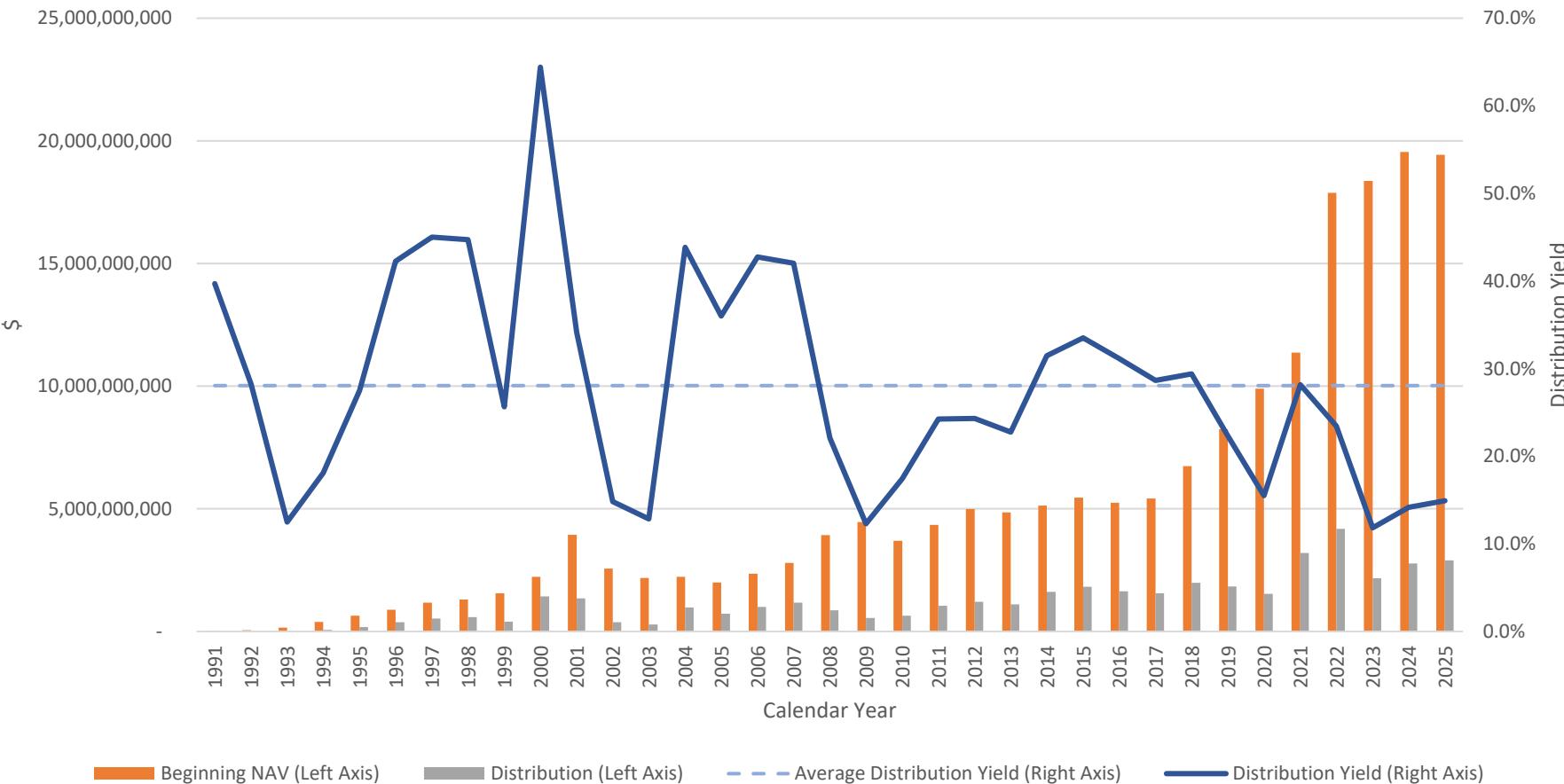


- Floating bars represent quartile return spreads by vintage year. Line in floating bar is the median return.
- VRS vintage year returns marked by “ ”.

Source: Private I/Burgiss – Global Private Equity.  
Note: As of 6/30/2025.

# Results:

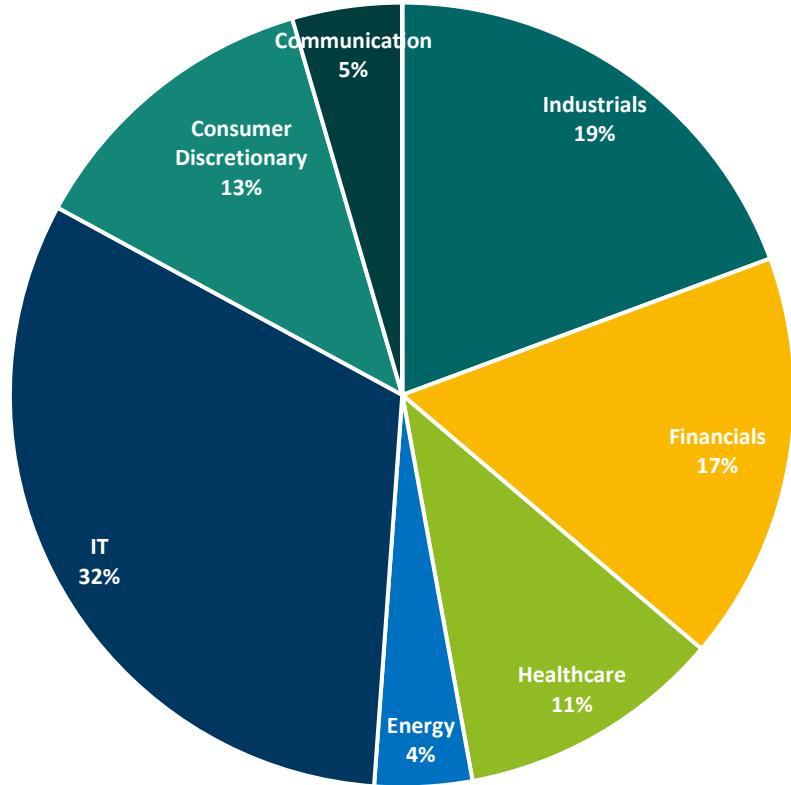
## VRS Distribution Yield by Fiscal Year



Source: Private I/Burgiss.

Note: As of 6/30/2025.

# Co-investments: Portfolio Exposures By Sectors



- 88 investments totaling \$2.4 billion cost since April 2013
- Investments made with 28 existing GPs
- Size range: \$7-58 million (\$27 million average size)

Note: As of 6/30/2025.

# Co-investments: VRS Co-investment Program

- Dedicated professional to manage the initiative with support from the remaining private equity staff
- Anticipated annual commitments of \$250-350 million
- Target investment size of \$20-75 million per investment
- VRS has reviewed approximately 274 potential opportunities and has made 88 investments
- Increased company allocations typically with no fees or carry

Focused on sourcing & executing opportunities alongside high conviction GPs in which VRS has a commitment

# Managers: Top Ten Investment Managers

Manager	Exposure
VRS Co-Investments	9.4%
GCM Grosvenor	8.1%
Hellman & Friedman	5.7%
TA Associates	5.2%
Stone Point Capital	4.0%
Bain Capital Partners	3.8%
CVC	3.8%
GTCR	3.8%
General Atlantic	3.7%
Apax	3.6%
<b>Total</b>	<b>51.1%</b>

*Note: Market values as of 3/31/2025 and unfunded commitments through 7/1/25.*

# VRS GP Diversification

- Buyout Domestic
- Buyout International
- Growth Managers
- Venture

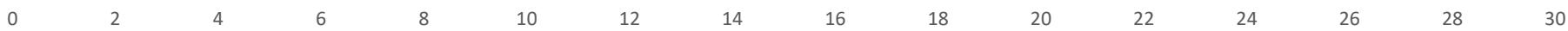
- Buyout Domestic/International

Five Mega Manager: \$20B+

Nine Upper MM Managers: \$10-20B

Sixteen MM Managers: \$2-10B

Two LMM Managers: <\$2B



# Diverse Investment Management Engagement (DIME)

- Eight existing in-house relationships
  - Asia Alternatives
  - Clearlake
  - ICV
  - MBK Partners
  - Siris
  - Sycamore
  - Veritas
  - Vista Equity
- 30 potential manager meetings in FY 2025
- Five relationships through GCM Grosvenor
- Quarterly reports from GCM Grosvenor

# Looking Forward

- Maintain modeled commitment pace
- Lean into conviction
- Co-investments on pace
- Selectively add new relationships

# Credit Strategies

# Steve Woodall

## Program Director



# Agenda:

## Credit Strategies Annual Review Topics

- Overview
- Markets
- Exposures
- Results
- Co-investments
- Managers
- Looking Forward

# Overview:

## Team Members

Professional	Position	Highest Degree	Professional Certifications	Investment Experience	VRS Tenure
Steve Woodall	Program Director	MBA	CFA, CAIA	21	20
Perry Corsello	Portfolio Manager	MBA	CFA	28	14
Erica Billingslea	Senior Investment Officer	MA		13	13
Kevin Bliss	Senior Investment Officer	MBA		11	4
Matt Bennett	Investment Officer	MBA		17	17
Shawn Rabalais	Senior Investment Analyst	MSc	CFA III Candidate	2	1.5
Kelly Baker	Portfolio Assistant	AAS		15	10

# Overview:

## Objectives

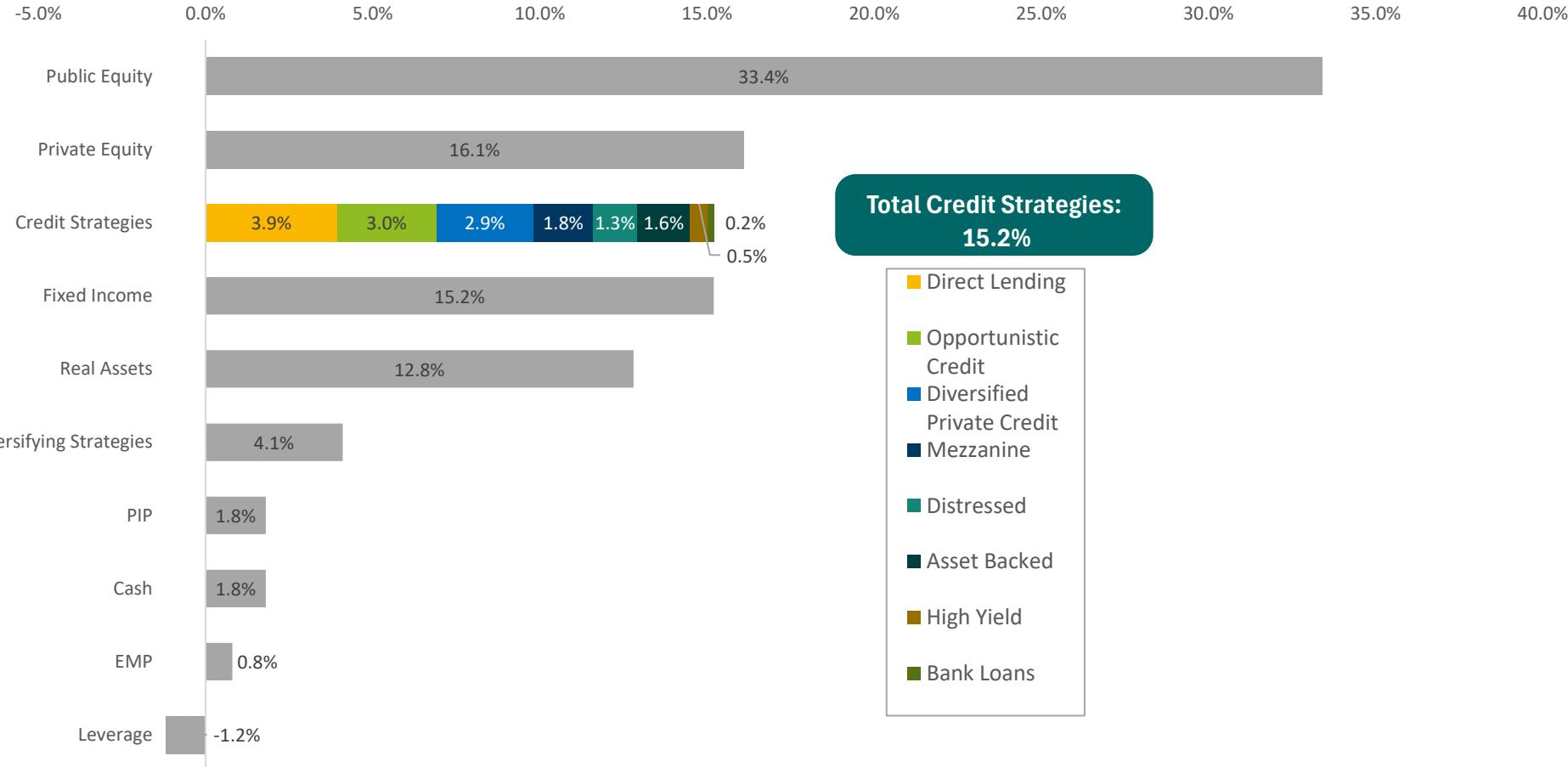
- **Competitive Returns** – target returns greater than those of a 50/50 blend of BB/B HY Index and Morningstar Loan index;
- **Cash Flow** – investments deliver higher yields than public markets and distribute income regularly;
- **Diversification** – low historical correlation to fixed income and global equities:

Portfolio	Credit Strategies	Bloomberg US Aggregate	Bloomberg US Treasury	Bloomberg High Yield Ba/B 2% Issuer Cap	Morningstar LSTA US Leveraged Loan	MSCI ACWI IMI
Credit Strategies	1.0					
Bloomberg US Aggregate	0.3	1.0				
Bloomberg US Treasury	0.2	1.0	1.0			
Bloomberg High Yield Ba/B 2% Issuer Cap	0.6	0.6	0.5	1.0		
Morningstar LSTA US Leveraged Loan	0.5	0.0	-0.2	0.7	1.0	
MSCI ACWI IMI	0.5	0.2	0.1	0.7	0.7	1.0

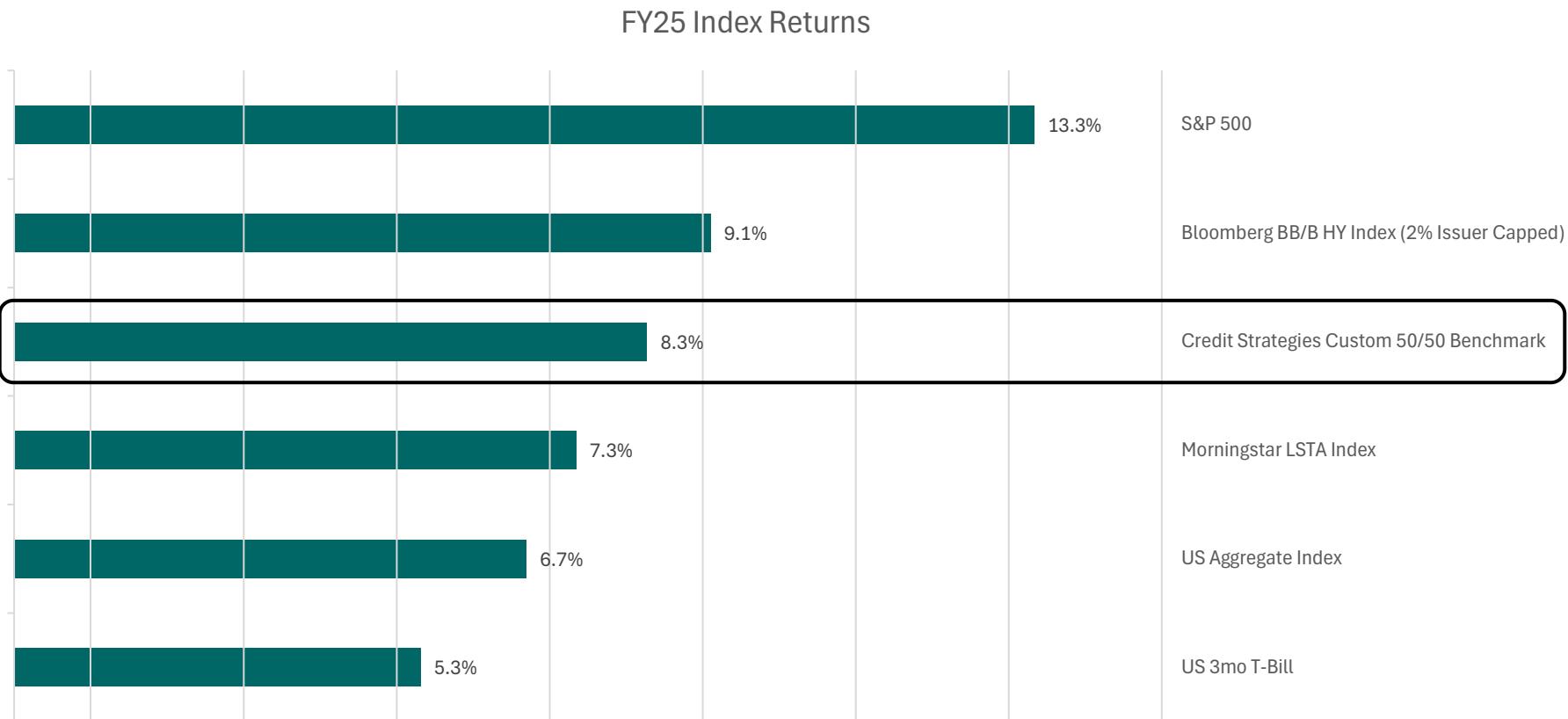
Source: VRS Analysis

# Overview:

## Asset Allocation - 6/30/25



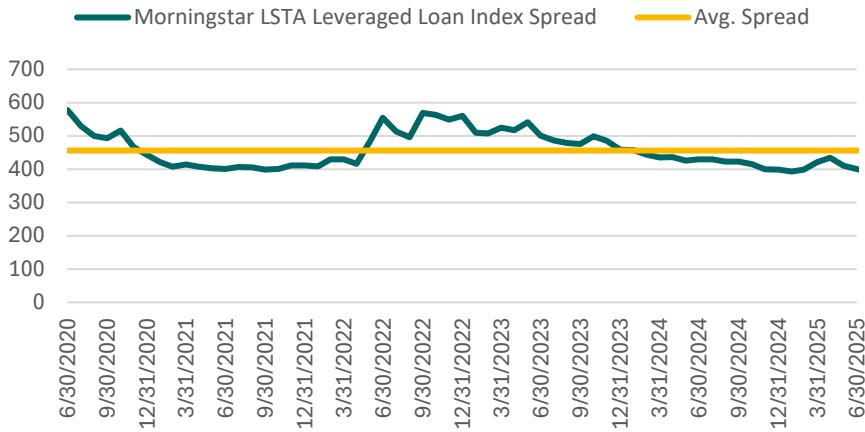
# Markets: FY25 Index Returns



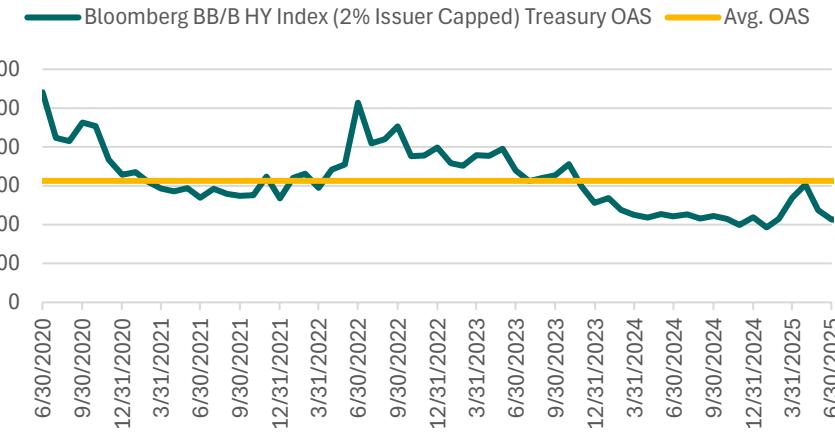
Source: VRS, Pitchbook, Bloomberg

# Markets: Index Spreads and Yields

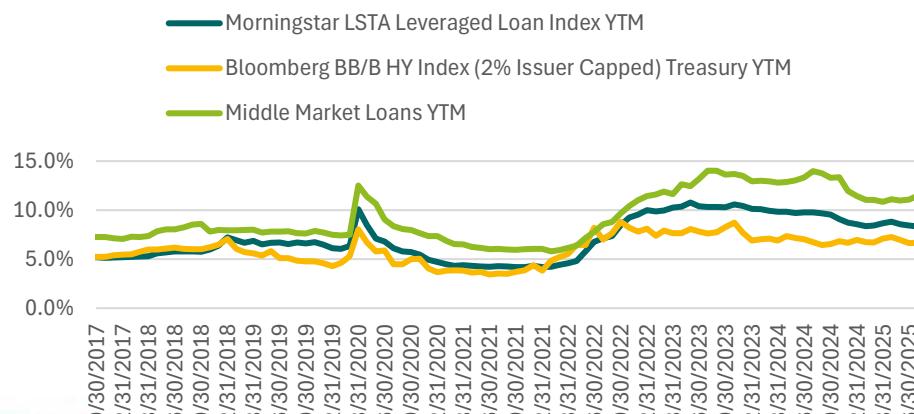
## Morningstar LSTA Loan Index Spread



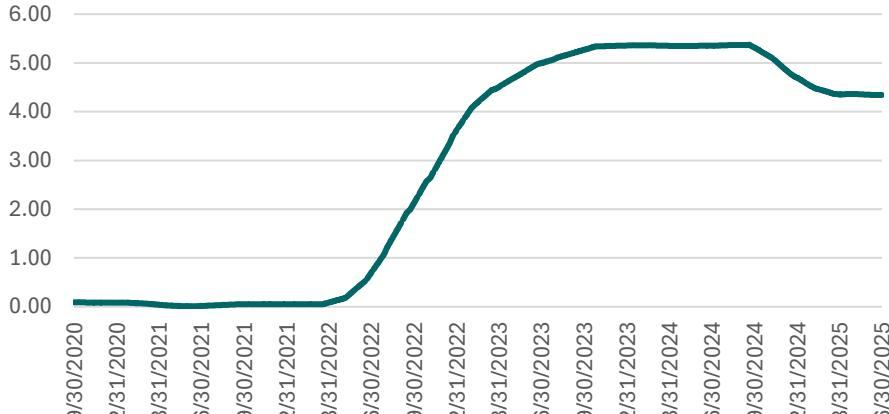
## Bloomberg HY BB/B Index Spread



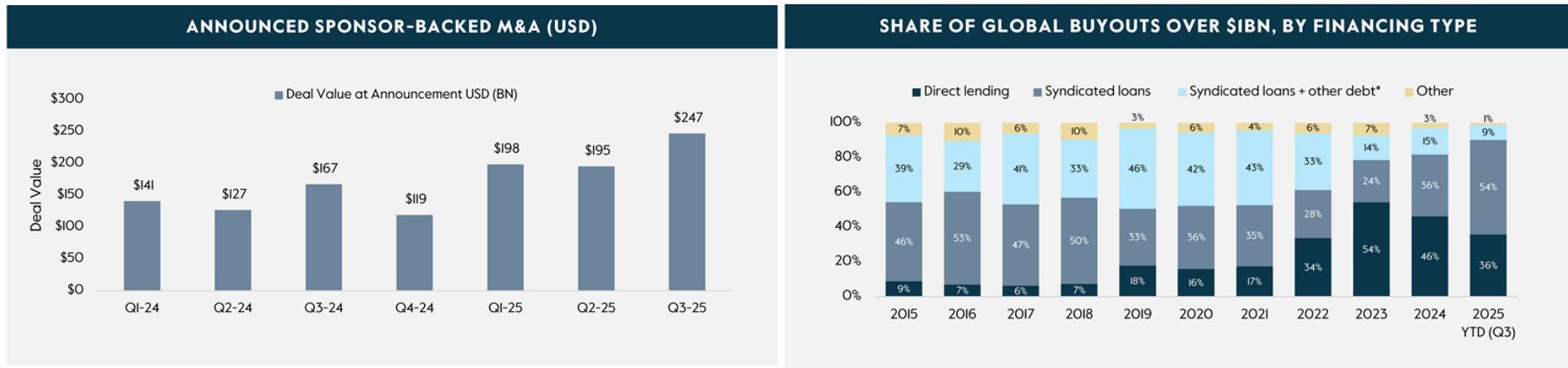
## Yields



## 3 Month SOFR



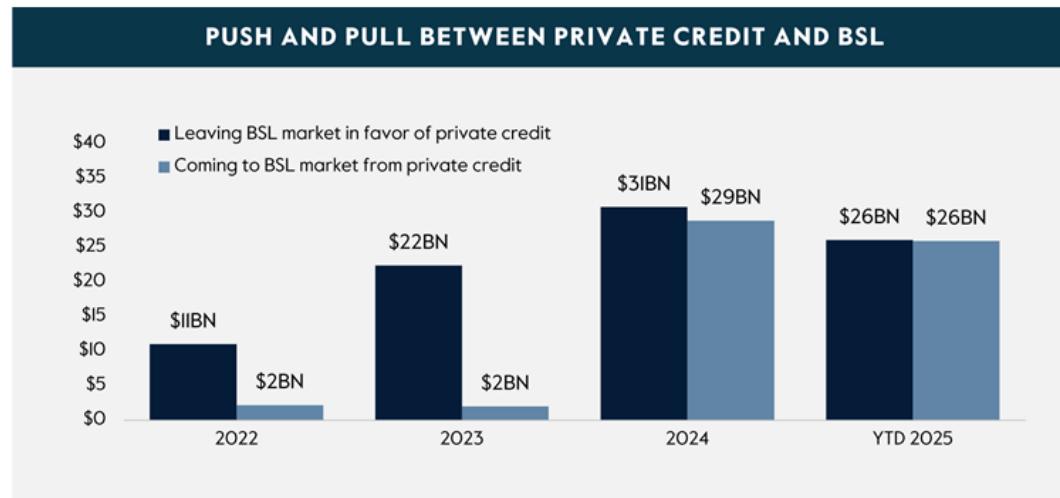
# Markets: Private vs Public Credit Markets



Source: Dealogic. Data through Sept. 30, 2025. Geography: US. There is no guarantee any trends will continue.

Source: PitchBook | LCD. Data through Sept. 30, 2025. Based on count of LBOs in US and Europe.

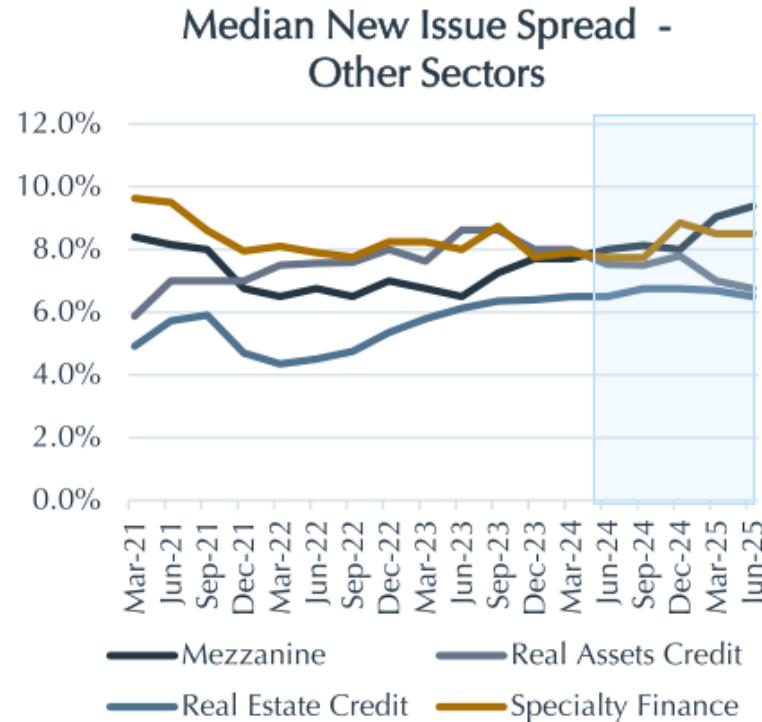
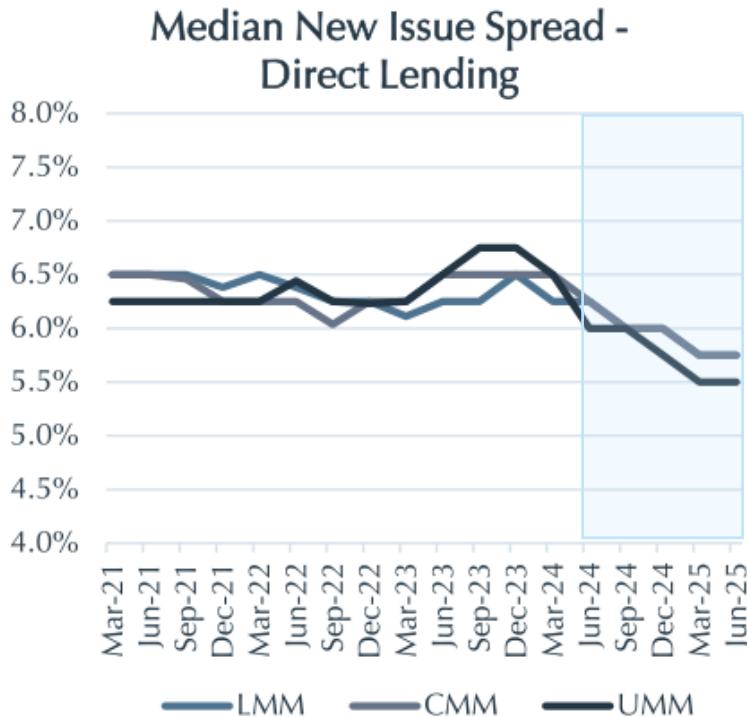
\*Other debt includes pre-placed second-lien facility, HY bonds or other types of debt issued alongside BSL deal. There is no guarantee any trends will continue.



Source: PitchBook | LCD. Geography: US. Data through Sept. 30, 2025. There is no guarantee any trends will continue.

# Markets:

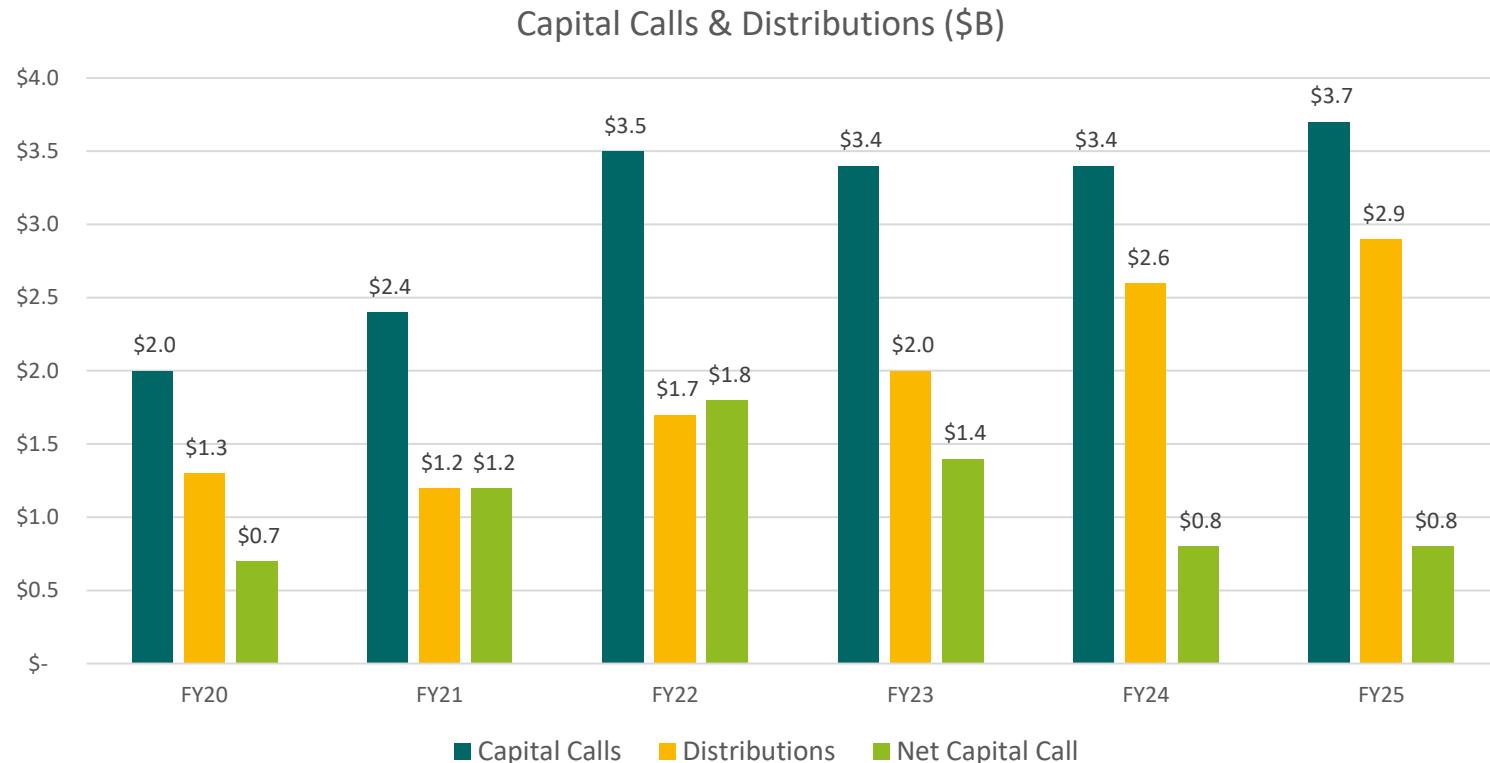
## New Issue Spreads



Source: Aksia. As of June 30, 2025. Upper Middle Market (UMM) is defined as companies with EBITDA equal to or greater than \$75. Core Middle Market (CMM) and Lower Middle Market (LMM) are defined as \$25 million to \$75 and below \$25 million in EBITDA, respectively.

# Exposures:

## Program Activity

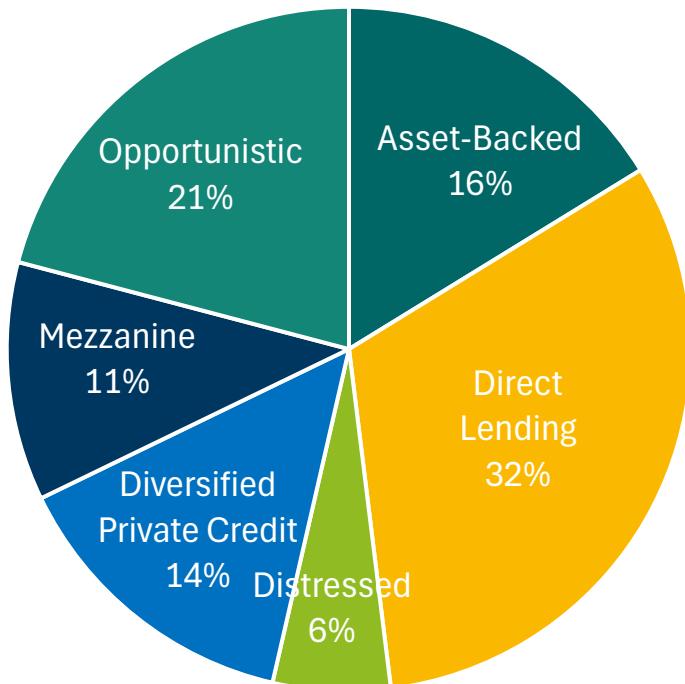


Liquidity Percentage					
FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
39%	32%	23%	10%	11%	5%

# Exposures: Program Activity

**FY25 Total Capital Calls: \$3.74BN**

**Total Capital Calls by Sub-Program**



## Private Credit Yields

Strategy	6/30/24	6/30/25
Direct Lending	10-12%	9-11%
Mezzanine	12-14%	11-14%
Opportunistic	11-15%	10-15%

# Exposures:

## Change in Sub Strategy Exposures

Sub Strategies	% Allocation 6/30/24	% Allocation 6/30/25	Change
Asset Backed	9.3%	10.5%	+1.2%
Bank Loan	4.1%	1.2%	-2.9%
Direct Lending	24.5%	25.9%	+1.4%
Distressed	9.9%	8.7%	-1.2%
Diversified Private Credit	17.3%	19.2%	+1.9%
High Yield	6.5%	3.4%	-3.1%
Mezzanine	10.6%	11.7%	+1.1%
Opportunistic Credit	17.8%	19.5%	+1.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

# Results:

## Total Credit Strategies – 6/30/25

	10 Year	5 Year	3 Year	1 Year	MV (\$MM)
Total Credit Strategies	6.9	9.1	8.8	9.2	
Strategic Benchmark	5.6	6.4	9.4	8.3	\$ 18,665
Excess Return	1.3	2.8	(0.6)	0.9	
Asset Backed	6.8	7.8	5.7	8.3	\$ 1,951
Bank Loan	4.7	7.4	9.5	7.0	\$ 223
Direct Lending	7.0	9.8	9.4	8.5	\$ 4,838
Distressed	7.9	13.5	5.4	5.4	\$ 1,628
Diversified Private Credit	-	-	9.9	11.0	\$ 3,583
High Yield	5.7	6.4	10.5	10.9	\$ 632
Mezzanine	10.9	11.4	9.5	10.5	\$ 2,177
Opportunistic Credit	6.6	10.9	9.1	9.9	\$ 3,632

Source: BNY Mellon

# Results: FY 2025

## Headwinds/Tailwinds

- (+ Strong absolute performance across strategy categories. Returns were primarily driven by high levels of income assisted by valuation improvements as spreads tightened during the fiscal year.
- (-) While 6 of 8 strategy categories outperformed during FY25, Bank Loan and Distressed each underperformed—by 1.3% and 2.9% respectively.

## Absolute Return Contribution:

	Absolute Return	% Contribution
Asset Backed	8.3%	0.8%
Bank Loan	7.0%	0.2%
Direct Lending	8.5%	2.1%
Distressed	5.4%	0.5%
Diversified Private Credit	11.0%	2.0%
High Yield	10.9%	0.5%
Mezzanine	10.5%	1.2%
Opportunistic Credit	9.9%	1.8%
<b>CS Return</b>		<b>9.2%</b>

## Relative Return Contribution:

	Relative Return
Asset Backed	0.0%
Bank Loan	0.0%
Direct Lending	0.0%
Distressed	-0.3%
Diversified Private Credit	0.5%
High Yield	0.2%
Mezzanine	0.3%
Opportunistic Credit	0.3%
<b>CS Excess</b>	<b>0.9%</b>

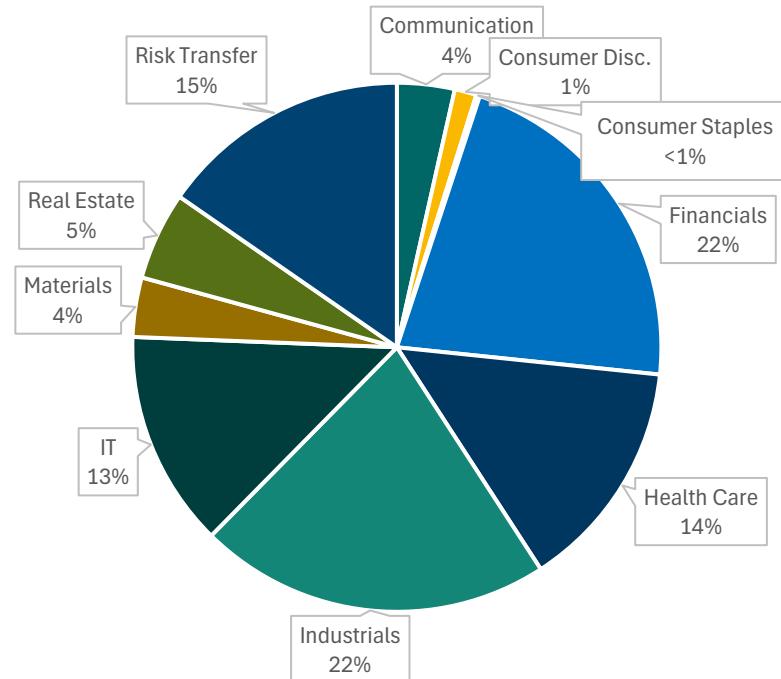
# Co-investments: Credit Strategies Approach

- Focused on sourcing & executing opportunities alongside high conviction GPs with which VRS has an existing relationship
- VRS reviews and approves all potential investments prior to moving forward
- Objective is to invest additional funds alongside existing strategies through a lower fee arrangement
- Anticipated annual commitments of \$300-450 million
- Target investment size of \$15-25 million per investment

# Co-investment: Exposures and Performance

Coinvestments by Sector

3/31/2025



- 72 investments totaling ~\$742MM of capital since inception (2019)
- Investments made alongside 17 existing GP relationships
- Size range: \$3.5MM - \$35MM (\$12.1MM average size)

Performance (%):	ITD	5 Year	3 Year	1 Year
CS Co-Investment	9.6%	12.3%	11.2%	11.7%
Benchmark Return	6.0%	6.4%	9.4%	8.3%
Excess Return	3.6%	5.9%	1.8%	3.4%

# Managers:

## Top 10 Investment Managers

Manager	Mandates	# Mandates	% Program
Ares	Asset-Backed, Distressed, Mezzanine, Direct Lending, Opportunistic	12	10.87%
Beach Point	Distressed, Opportunistic	4	8.73%
HPS	Asset-Backed, Mezzanine, Direct Lending	5	8.47%
BlackRock	Direct Lending	1	6.08%
Carlyle	Diversified Private Credit	1	5.35%
Sixth Street	Distressed, Opportunistic	5	4.54%
Magnetar	Diversified Private Credit	1	4.34%
Aksia	Diversified Private Credit	2	4.33%
Solus	Opportunistic	2	4.11%
KKR	Asset-Backed, Distressed, Direct Lending	3	4.03%

# Managers: DIME Investments

- 26 potential manager meetings/calls/reviews in FY 2025
- Quarterly reports from Aon Hewitt on DIME managers in the asset class
- Aksia relationship has provided more exposure to smaller credit managers
- Five relationships via Aksia-managed account

# Looking Ahead:

- Maintain modeled commitment pace to private credit, the expected returns of which exceed the actuarial return of the total fund as well as the asset class benchmark over a multi-year time frame.
- Selectively add new exposures with a focus on a strategy mix that delivers high contractual returns while having structural downside protection.
- Continued improvement of VRS economics through co-investment participation.

# Private Investment Partnerships

Steve Woodall  
Program Director



# Agenda:

## PIP Annual Review Topics

- Overview
- Exposures
- Results
- Looking Forward

# Overview:

## Team Members

Professional	Position	Highest Degree	Professional Certifications	Investment Experience	VRS Tenure
Steve Woodall	Program Director	MBA	CFA, CAIA	21	20
Erica Billingslea	Investment Officer	MA		13	13
Matt Bennett	Investment Officer	MBA		17	17
Kelly Baker	Portfolio Assistant	AAS		15	10

# Overview: Private Investment Partnerships

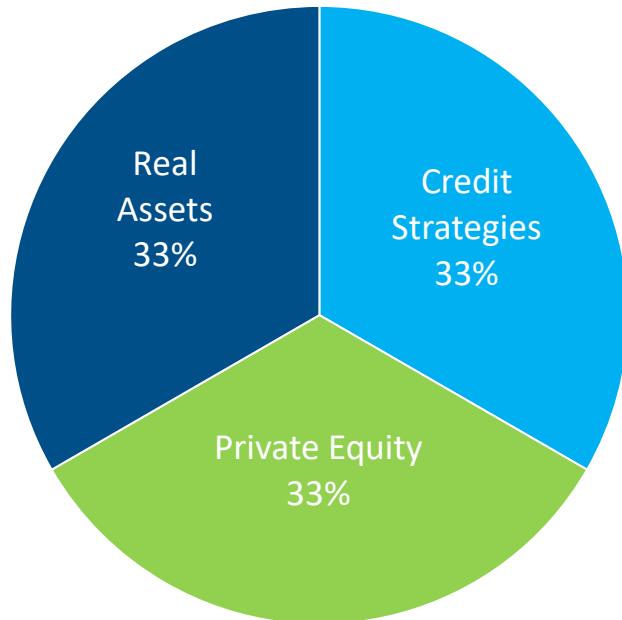
- A diversified investment platform dedicated to private and illiquid investments that invests across private equity, real assets, and credit strategies.
- Portfolios that emphasize opportunistic asset allocation, co-investments and reduced investment management fees/carry
- A close relationship between partner organizations that allows for expanded access and an elevated level of inclusion

# Exposures: Portfolio Update

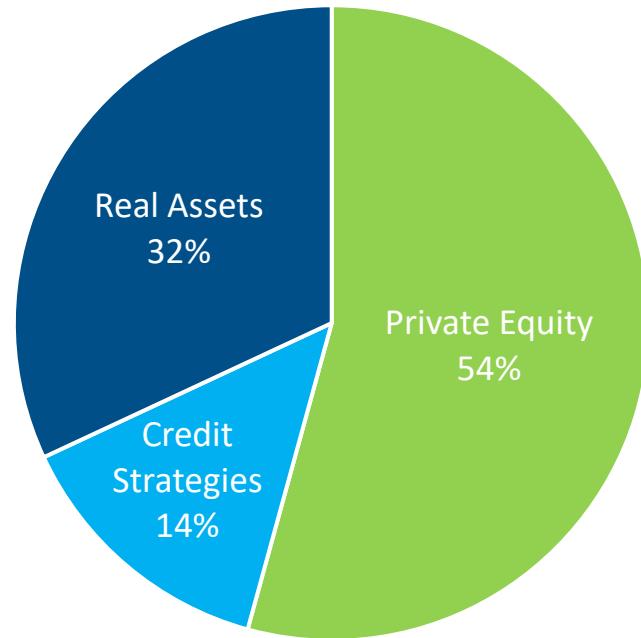
- Asset allocation
- Commitments

# Exposures: Asset Allocation

**Benchmark – June 30, 2025**



**PIP Actual – June 30, 2025**



# Exposures:

## Strategy Mix FY25

	6/30/24	6/30/25	Change %
Private Equity	55%	54%	-1%
Real Assets	18%	16%	-2%
Real Estate	14%	17%	+3%
Credit	13%	14%	+1%
<b>Total (MM)</b>	<b>\$2,583</b>	<b>\$2,394</b>	<b>-7%</b>

# Exposures: Commitments (\$mm)

	Commitment Amount	Total Funded	Total Unfunded
6/30/2024:	2,750	1,853.6	896.4
6/30/2025:	2,750	1,968.1	781.9
Change (\$mm):	-	<b>+114.5</b>	<b>-114.5</b>

# Results:

## Performance – 6/30/25

	Inception (2015)	5 Year	3 Year	1 Year
Total PIP	<b>8.55</b>	<b>12.92</b>	<b>6.28</b>	<b>8.79</b>
Benchmark	7.75	9.27	5.26	6.16
<b>Excess Return</b>	<b>0.80</b>	<b>3.65</b>	<b>1.02</b>	<b>2.63</b>

Source: BNY Mellon; 6/30/25 market value and performance are lagged and based on 3/31/25 market values that are adjusted for interim cashflows.

# Private Markets Roundtable

- Expansion of private assets into the retail channel
- Concerns of systematic risk from private credit
- Impact of AI on private markets

